



U.S. Department
of Transportation

**Federal Aviation
Administration**

Federal Aviation Regulations

Part 133 Rotorcraft External-Load Operations

This edition replaces the existing loose-leaf
Part 133 and its changes.

This FAA publication of the basic Part 133, effective May 17, 1964,
incorporates Amendments 133-1 through 133-12 with preambles.

Published
July 1993

external-load operations, the safety of subsequent operations with that rotorcraft (including nonexternal-load operations with passengers) would be jeopardized. The Agency considers this a valid objection to external-load operations at total weights exceeding the maximum certificated weight established under the provisions of Part 6 or 7. For this reason, the total weight of all classes of rotorcraft-load combinations has been limited, for all operations subject to Part 133 [New], to the maximum certificated weight established for the rotorcraft under the provisions of Part 6 or 7. The applicant may, of course, apply for an increase in the rotorcraft's maximum certificated weight, but this must be done under the provisions of Part 6 or 7.

Several proposed provisions have been deleted that dealt with cable angle limits, maximum tow loads, and related requirements, for Class C (formerly Class IV) rotorcraft-load combinations. The Agency believes that too little is known about rotorcraft towing operations to justify adoption of these provisions at this time. The need for such provisions will be studied further as service experience accumulates.

In addition to the previously discussed major revisions to Part 133 [New], a number of minor revisions have been made, including numerous editorial revisions to clarify the Part. In all cases, the revised provisions are no more restrictive than those in the notice of proposed rule making circulated as Draft Release 63-5.

To arrive at an effective date for Part 133 [New], the Agency took into account two opposing factors. On the one hand, it is desirable that the relief granted by this new Part be made available as soon as possible to rotorcraft external-load operators; on the other, some interval of time is necessary (between adoption and effective date) to prepare the Agency's field offices for quick processing of operator certificate applications. An interval of 120 days between adoption and effective date has been selected as a reasonable compromise.

Interested persons have been afforded an opportunity to participate in the making of these regulations, and due consideration has been given to all relevant matter presented.

This amendment, as the first final rule to be published in Subchapter G adds that Subchapter to Chapter I of Title 14.

In consideration of the foregoing, effective May 17, 1964, Chapter I of Title 14, Code of Federal Regulations, is amended as hereinafter set forth.

These regulations are issued under the authority of section 307, 3 13(a), 601, and 607 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421, and 1427).

Amendment133-1

Carriage of Persons Other Than Crewmembers

Adopted: January 22, 1965

Effective: January 28, 1965

(Published in 30 FR 883, January 28, 1965)

The purpose of this amendment to Part 133 of the Federal Aviation Regulations is to permit the carriage of persons necessary for the overall work of a Class A or Class B external-load operation, but not necessarily performing an essential function in the actual operation. This amendment also permits the carriage of crewmember trainees on rotorcraft external-load operations.

Section 133.45(a) provides that, "No person who is not a flight crewmember may be carried unless he performs an essential function in connection with the external-load operation." Under this section the carriage of persons who are not essential to the actual external-load operation and whose presence is not necessary during the operation is prohibited. Therefore, for example, a fire fighter could not be carried along with fire fighting equipment on an external-load operation. The reason for this limitation is that the aircraft involved need not be shown to comply with standard airworthiness requirements. However, Agency review of external-load operations has shown that the passenger carrying limitation should be relaxed due to the number of detailed airworthiness requirements contained in Part 133, and due to the excellent safety record shown in rotorcraft external-load operations. There is no reason to believe that this safety record will not be maintained in the future.

However, the Agency is not relaxing the rule with regard to the carriage of persons essential to the overall performance of a Class C (towing) operation since relatively little service experience has been gained with the level of safety of Class C operations.

external-load operations, the safety of subsequent operations with that rotorcraft (including nonexternal-load operations with passengers) would be jeopardized. The Agency considers this a valid objection to external-load operations at total weights exceeding the maximum certificated weight established under the provisions of Part 6 or 7. For this reason, the total weight of all classes of rotorcraft-load combinations has been limited, for all operations subject to Part 133 [New], to the maximum certificated weight established for the rotorcraft under the provisions of Part 6 or 7. The applicant may, of course, apply for an increase in the rotorcraft's maximum certificated weight, but this must be done under the provisions of Part 6 or 7.

Several proposed provisions have been deleted that dealt with cable angle limits, maximum tow loads, and related requirements, for Class C (formerly Class IV) rotorcraft-load combinations. The Agency believes that too little is known about rotorcraft towing operations to justify adoption of these provisions at this time. The need for such provisions will be studied further as service experience accumulates.

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<i>Title</i>	<i>Federal Register citation</i>
Form number and clarifying revisions	(40 FR 2576; Jan. 14, 1975)
Rotorcraft anticollision light standards	(41 FR 5290; Feb. 5, 1976)

Interested persons have been afforded an opportunity to participate in the making of these amendments and due consideration has been given to all matter presented. A number of substantive changes and changes of an editorial and clarifying nature have been made to the proposed rules based upon the relevant comments received and upon further review within the FAA. Except for the minor editorial and clarifying changes and the substantive changes discussed hereinafter, these amendments and the reasons therefore are the same as those contained in Notice 75-10.

After issuing Notice 75-10, the following six additional notices of proposed rule making were issued as part of the First Biennial Airworthiness Review Program.

<i>Notice No.</i>	<i>Federal Register citation</i>	<i>Title</i>
75-19	40 FR 21866; May 19, 1975	Notice No. 3: Power-plant Proposals.
75-20	40 FR 22110; May 20, 1975	Notice No. 4: Equipment Deviation List.
75-23	40 FR 23048; May 27, 1975	Notice No. 5: Equipment and Systems Proposals.
75-25	40 FR 24664; June 9, 1975	Notice No. 6: Flight Proposals.
75-26	40 FR 24802; June 10, 1975	Notice No. 7: Airframe Proposals.
75-31	40 FR 20410; July 11, 1975	Notice No. 8: Aircraft, Engine, and Propeller Airworthiness, and Procedural Proposals.

Based upon further review by the FAA, a number of proposals which were contained in Notice 75-10 are not being dealt with herein but will be considered in conjunction with other proposals contained in one of the later Airworthiness Review Program Notices of proposed rule making.

The following discussion is keyed to the like-numbered proposals contained in Notice 75-10:

Proposal 2-1. One commentator suggested that the proposed change to § 21.33(a) be revised to limit the new aircraft engine and propeller inspection and test provisions to prototypes only. The FAA does not agree. The intent of the proposals was to make the inspection and test requirements in § 21.33(a) compatible for aircraft, aircraft engines, and propellers. The provision applies to the item presented for type certification tests irrespective of whether or not the item is considered a prototype by the applicant for the type certificate. The proposal is, therefore, adopted without substantive change.

Proposal 2-2. No unfavorable comments were received on the proposal to amend § 23.23. Accordingly, the proposal is adopted without substantive change.

Proposal 2-3. No unfavorable comments were received on the proposal to amend § 23.141. Accordingly, the proposal is adopted without substantive change.

Proposal 2-4. No unfavorable comments were received on the proposal to amend § 23.143(b). Accordingly, the proposal is adopted without substantive change.

Proposal 2-5. No unfavorable comments were received on the proposal to amend § 23.145. Accordingly, the proposal is adopted without substantive change.

Proposal 2-6. The proposed change to § 23.149(b) concerning the language “without exceptional piloting skill, alertness, or strength” related to a proposed amendment to § 23.149 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 23.149(b) contained in Notice No. 2 is therefore being deferred until final rule making action is taken with respect to the related proposal in Notice 75-25. Comments submitted for proposal 2-6 will be considered at that time.

Proposal 2-7. Although no unfavorable comment was received on the proposal to amend § 23.175(c), the FAA believes that clarification is necessary. The term “or thrust” has been added to the language “maximum cruising power” in proposed § 23.175(c)(3). Proposed § 23.175(c)(4) was intended to clarify the requirement concerning trim speed, but the FAA believes the conflict in language with a similar provision in § 23.175(b)(2)(iii) may cause confusion. Therefore, proposed § 23.175(c)(4) is withdrawn.

Proposal 2-8. The proposed change to § 23.253(b) is related to a proposed amendment to § 23.253(b)(3) that is contained in Airworthiness Review Program Notice No. 8: Aircraft, Engine, and Propeller Airworthiness, and Procedural Proposals (Notice 75-31; 40 FR 29410 July 11, 1975). The proposed amendment to § 23.253(b) contained in Notice No. 2 is therefore being deferred until final rule making action is

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Proposal 2-21. One commentator objected to proposed new 23.941 concerning airplanes with variable inlet or exhaust system geometry as being unnecessary and unjustified in Part 23. The FAA agrees that this provision should not be added to Part 23 at this time and is therefore withdrawing the proposal.

Proposal 2-22. One commentator suggested that the proposed changes in §§ 23.971 and 23.999 be revised to require a quick actuation drain valve on each fuel tank. The proposal, however, was not to require new drainage outlets but to establish standards for the drains set forth in proposed § 23.971 (b) and present § 23.999(a). The FAA does not have sufficient information to indicate that a need exists for a quick actuation drain valve on each fuel tank considering the large number of different types of fuel tanks which are included on Part 23 airplanes and the use of sediment bowls and chambers. The proposal is therefore adopted without substantive change.

Proposal 2-23. One commentator questioned the proposed requirement in § 23.977(a)(2) that a turbine engine fuel strainer prevent the passage of any object that could restrict fuel flow or damage any fuel system component. The commentator asserted that a strainer which met this requirement would have an opening so small that ice accumulation with the use of turbine fuels would be a problem. The FAA does not agree. This is identical to the provision in § 25.977(a)(2). Experience with fuel strainers that would meet the proposed standards in § 23.977(a)(2) has shown that a strainer can prevent the passage of the noted objects and also prevent ice accumulation.

One commentator noted that the clear area of each fuel tank outlet strainer should be at least six times the area of the outlet line instead of five times as proposed in § 23.977(b). This provision is identical to § 25.977(c) and the FAA considers that experience with this requirement in Part 25 has been satisfactory.

Proposal 2-24. the intent of the proposal to add a new § 23.979(e) was to provide strength requirements including load factors, applicable to the airplane defueling system to cover surge pressure during defueling. Upon further review the FAA believes that the proposed amendment is premature. Therefore, the proposal is withdrawn.

Proposal 2-25. No unfavorable comments were received on the proposal to amend § 23.995(d). Accordingly, the proposal is adopted without substantive change.

Proposal 2-26. One commentator suggested that there should be sufficient clearance between the quick actuation drain and other parts of the airplane to allow the fuel sample to be drained into a typical, small container. The FAA believes fuel system drains which meet the proposed requirements of paragraphs (b)(1) and (b)(3) of § 23.999, that the drain discharge clear of all parts of the airplane and that it be readily accessible, will have sufficient clearance to allow a fuel sample to be drained into a small container.

One commentator suggested that the requirement in § 23.999(b)(1) that the drain must discharge clear of all parts of the airplane, would create unnecessary design and construction restraints. The FAA believes that by coating some airplane surfaces with fuel or by trapping quantities of fuel in certain locations a fire hazard exists. This fire hazard should be limited by this proposal. Further, the FAA believes this requirement can be met without an undue restraint on airplane design.

A commentator asserted that the proposed requirement in § 23.999(b)(3), that the drain valve be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted cannot be justified. The commentator noted that the fuel tanks would be ruptured in such a landing and nothing would be gained if the drain was protected. The FAA disagrees, similar fuel tank installation requirements are set forth in § 23.967 and experience indicates that the fuel system can and should be either located or protected to prevent fuel leakage in such a landing. The FAA does agree that the proposal needs to be clarified to more specifically provide a design specification and has, so modified paragraph (b)(3). Also see Proposal 2-70.

Proposal 2-27. No unfavorable comments were received on the proposal to add a new § 23.1093(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-28. Proposed § 23.111 l(c) was misunderstood by one commentator who asserted that it is not possible to assure the impossibility of failure of the engine lubricating system. The proposal, however, was directed toward the elimination of hazardous contamination of the cabin air assuming a failure of the engine lubricating system. In consideration of the misunderstanding, the language has been revised to emphasize the prevention of hazardous contamination of cabin air system.

Proposal 2-29. Although no unfavorable comment was received on the proposed § 23.1125, the FAA believes that the proposal could be misunderstood as to whether use of the heat exchanger would permit or prohibit the passage of exhaust gases through the exchanger when hot air was not being directed

Proposal 2-21. One commentator objected to proposed new 23.941 concerning airplanes with variable inlet or exhaust system geometry as being unnecessary and unjustified in Part 23. The FAA agrees that this provision should not be added to Part 23 at this time and is therefore withdrawing the proposal.

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Proposal 2-24. the intent of the proposal to add a new § 23.979(e) was to provide strength requirements including load factors, applicable to the airplane defueling system to cover surge pressure during defueling. Upon further review the FAA believes that the proposed amendment is premature. Therefore, the proposal is withdrawn.

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Proposal 2-21. One commentator objected to proposed new 23.941 concerning airplanes with variable inlet or exhaust system geometry as being unnecessary and unjustified in Part 23. The FAA agrees that this provision should not be added to Part 23 at this time and is therefore withdrawing the proposal.

Proposal 2-22. One commentator suggested that the proposed changes in §§ 23.971 and 23.999 be revised to require a quick actuation drain valve on each fuel tank. The proposal, however, was not to require new drainage outlets but to establish standards for the drains set forth in proposed § 23.971 (b) and present § 23.999(a). The FAA does not have sufficient information to indicate that a need exists for a quick actuation drain valve on each fuel tank considering the large number of different types of fuel tanks which are included on Part 23 airplanes and the use of sediment bowls and chambers. The proposal is therefore adopted without substantive change.

Proposal 2-23. One commentator questioned the proposed requirement in § 23.977(a)(2) that a turbine engine fuel strainer prevent the passage of any object that could restrict fuel flow or damage any fuel system component. The commentator asserted that a strainer which met this requirement would have an opening so small that ice accumulation with the use of turbine fuels would be a problem. The FAA does not agree. This is identical to the provision in § 25.977(a)(2). Experience with fuel strainers that would meet the proposed standards in § 23.977(a)(2) has shown that a strainer can prevent the passage of the noted objects and also prevent ice accumulation.

One commentator noted that the clear area of each fuel tank outlet strainer should be at least six times the area of the outlet line instead of five times as proposed in § 23.977(b). This provision is identical to § 25.977(c) and the FAA considers that experience with this requirement in Part 25 has been satisfactory.

Proposal 2-24. the intent of the proposal to add a new § 23.979(e) was to provide strength requirements including load factors, applicable to the airplane defueling system to cover surge pressure during defueling. Upon further review the FAA believes that the proposed amendment is premature. Therefore, the proposal is withdrawn.

Proposal 2-25. No unfavorable comments were received on the proposal to amend § 23.995(d). Accordingly, the proposal is adopted without substantive change.

Proposal 2-26. One commentator suggested that there should be sufficient clearance between the quick actuation drain and other parts of the airplane to allow the fuel sample to be drained into a typical, small container. The FAA believes fuel system drains which meet the proposed requirements of paragraphs (b)(1) and (b)(3) of § 23.999, that the drain discharge clear of all parts of the airplane and that it be readily accessible, will have sufficient clearance to allow a fuel sample to be drained into a small container.

One commentator suggested that the requirement in § 23.999(b)(1) that the drain must discharge clear of all parts of the airplane, would create unnecessary design and construction restraints. The FAA believes that by coating some airplane surfaces with fuel or by trapping quantities of fuel in certain locations a fire hazard exists. This fire hazard should be limited by this proposal. Further, the FAA believes this requirement can be met without an undue restraint on airplane design.

A commentator asserted that the proposed requirement in § 23.999(b)(3), that the drain valve be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted cannot be justified. The commentator noted that the fuel tanks would be ruptured in such a landing and nothing would be gained if the drain was protected. The FAA disagrees, similar fuel tank installation requirements are set forth in § 23.967 and experience indicates that the fuel system can and should be either located or protected to prevent fuel leakage in such a landing. The FAA does agree that the proposal needs to be clarified to more specifically provide a design specification and has, so modified paragraph (b)(3). Also see Proposal 2-70.

Proposal 2-27. No unfavorable comments were received on the proposal to add a new § 23.1093(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-28. Proposed § 23.111 l(c) was misunderstood by one commentator who asserted that it is not possible to assure the impossibility of failure of the engine lubricating system. The proposal, however, was directed toward the elimination of hazardous contamination of the cabin air assuming a failure of the engine lubricating system. In consideration of the misunderstanding, the language has been revised to emphasize the prevention of hazardous contamination of cabin air system.

Proposal 2-29. Although no unfavorable comment was received on the proposed § 23.1125, the FAA believes that the proposal could be misunderstood as to whether use of the heat exchanger would permit or prohibit the passage of exhaust gases through the exchanger when hot air was not being directed

Proposal 2-21. One commentator objected to proposed new 23.941 concerning airplanes with variable inlet or exhaust system geometry as being unnecessary and unjustified in Part 23. The FAA agrees that this provision should not be added to Part 23 at this time and is therefore withdrawing the proposal.

Proposal 2-22. One commentator suggested that the proposed changes in §§ 23.971 and 23.999 be revised to require a quick actuation drain valve on each fuel tank. The proposal, however, was not to require new drainage outlets but to establish standards for the drains set forth in proposed § 23.971 (b) and present § 23.999(a). The FAA does not have sufficient information to indicate that a need exists for a quick actuation drain valve on each fuel tank considering the large number of different types of fuel tanks which are included on Part 23 airplanes and the use of sediment bowls and chambers. The proposal is therefore adopted without substantive change.

Proposal 2-23. One commentator questioned the proposed requirement in § 23.977(a)(2) that a turbine engine fuel strainer prevent the passage of any object that could restrict fuel flow or damage any fuel system component. The commentator asserted that a strainer which met this requirement would have an opening so small that ice accumulation with the use of turbine fuels would be a problem. The FAA does not agree. This is identical to the provision in § 25.977(a)(2). Experience with fuel strainers that would meet the proposed standards in § 23.977(a)(2) has shown that a strainer can prevent the passage of the noted objects and also prevent ice accumulation.

One commentator noted that the clear area of each fuel tank outlet strainer should be at least six times the area of the outlet line instead of five times as proposed in § 23.977(b). This provision is identical to § 25.977(c) and the FAA considers that experience with this requirement in Part 25 has been satisfactory.

Proposal 2-24. the intent of the proposal to add a new § 23.979(e) was to provide strength requirements including load factors, applicable to the airplane defueling system to cover surge pressure during defueling. Upon further review the FAA believes that the proposed amendment is premature. Therefore, the proposal is withdrawn.

Proposal 2-25. No unfavorable comments were received on the proposal to amend § 23.995(d). Accordingly, the proposal is adopted without substantive change.

Proposal 2-26. One commentator suggested that there should be sufficient clearance between the quick actuation drain and other parts of the airplane to allow the fuel sample to be drained into a typical, small container. The FAA believes fuel system drains which meet the proposed requirements of paragraphs (b)(1) and (b)(3) of § 23.999, that the drain discharge clear of all parts of the airplane and that it be readily accessible, will have sufficient clearance to allow a fuel sample to be drained into a small container.

One commentator suggested that the requirement in § 23.999(b)(1) that the drain must discharge clear of all parts of the airplane, would create unnecessary design and construction restraints. The FAA believes that by coating some airplane surfaces with fuel or by trapping quantities of fuel in certain locations a fire hazard exists. This fire hazard should be limited by this proposal. Further, the FAA believes this requirement can be met without an undue restraint on airplane design.

A commentator asserted that the proposed requirement in § 23.999(b)(3), that the drain valve be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted cannot be justified. The commentator noted that the fuel tanks would be ruptured in such a landing and nothing would be gained if the drain was protected. The FAA disagrees, similar fuel tank installation requirements are set forth in § 23.967 and experience indicates that the fuel system can and should be either located or protected to prevent fuel leakage in such a landing. The FAA does agree that the proposal needs to be clarified to more specifically provide a design specification and has, so modified paragraph (b)(3). Also see Proposal 2-70.

Proposal 2-27. No unfavorable comments were received on the proposal to add a new § 23.1093(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-28. Proposed § 23.111 l(c) was misunderstood by one commentator who asserted that it is not possible to assure the impossibility of failure of the engine lubricating system. The proposal, however, was directed toward the elimination of hazardous contamination of the cabin air assuming a failure of the engine lubricating system. In consideration of the misunderstanding, the language has been revised to emphasize the prevention of hazardous contamination of cabin air system.

Proposal 2-29. Although no unfavorable comment was received on the proposed § 23.1125, the FAA believes that the proposal could be misunderstood as to whether use of the heat exchanger would permit or prohibit the passage of exhaust gases through the exchanger when hot air was not being directed

Proposal 2-64. One commentator recommended that proposed § 25.841(b)(1) be revised to make it clear that the pressure relief function may be combined with the regulating valve. The proposal would delete the requirement that one of the pressure relief valves be a pressure regulating valve, but it would still allow such a design. This was specifically covered in Notice 75-10.

One commentator suggested that the language “passenger or crew compartment” in proposed § 25.841 (b)(8) be changed to read “occupiable area in the cabin” to ensure that a pressure sensor is located in the lower deck service compartment. The FAA believes the language “occupiable area in the cabin” does not clarify the proposed requirements. The language “passenger and crew compartment” is not limited to the main deck of the airplane, but includes a lower deck service compartment even though this lower deck service compartment may not be occupied during takeoff and landing. For clarification, the parenthetical “ ‘ (including upper and lower lobe galleys) ’ ” has been added to § 25.841(b)(8) as adopted.

Proposal 2-65. The proposed change to § 25.853 concerning the certification requirements necessary to permit smoking in transport category airplanes is related to a proposed amendment to § 25.853 that is contained in Airworthiness Review Program, Notice No. 8: Aircraft, Engine and Propeller Airworthiness, and Procedural Proposals (Notice 75-3 1, 40 FR 29410; July 11, 1975). The proposed amendment to § 25.853 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-3 1: Comments submitted for Proposal 2-65 will be considered at that time.

Proposal 2-66. No unfavorable comments were received on the proposal to amend § 25.933(b). Accordingly, the proposal is adopted without substantive change.

Proposal 2-67. A commentator suggested that a cross-reference to § 25.143 should be added to proposed § 25.941. The FAA agrees that the pilot strength limits now set forth in § 25.143 should be referenced in § 25.941 in order to define appropriately what constitutes “exceptional strength on the part of the pilot”. Accordingly, a paragraph (c) has been added to proposed § 25.941 for that purpose.

Proposal 2-68. Two commentators agreed with the intent of the proposed § 25.95 l(a) concerning fuel system design and operation of the auxiliary power unit (APU) but requested that it be withdrawn to allow time to review other Part 25 provisions for applicability to APU installations. The FAA does not believe that a further review of Part 25 should in this case, delay completion of this rulemaking action. However, if the FAA determines that the language “auxiliary power unit” should be specifically set forth in other provisions to avoid misinterpretation, the FAA will take action to clarify these provisions.

One commentator stated that the fuel system for an APU operated on the ground would be unnecessarily subject to the same requirement as the engine fuel system. The FAA does not agree that this is necessary. If certain operating conditions are the same for both the engine fuel system and the APU fuel system, the FAA believes that the requirements during such periods should be the same. The proposal is therefore adopted without substantive change.

Proposal 2-69. One commentator suggested that the language “proof and ultimate factors” in the proposal for new paragraphs (d) and (e) of § 25.979 be revised to be consistent with § 25.301. The FAA agrees that the terminology should be consistent and the section as adopted is reworded to use the term ultimate load.

One commentator questioned whether the design criteria for the pressure fueling system was applicable to fuel tanks and fuel tank vents. The proposed amendment to § 25.979 was not intended to apply to fuel tanks and vents. The section as adopted has been revised to make this clear.

Proposal 2-70. Several commentators questioned the meaning of the term “quick actuation drain value” in proposed § 25.999(b)(3). The FAA agrees that the term may be subject to misinterpretation and that the provision is complete without the words “quick actuation”.

One commentator asserted that the proposed requirement in § 25.999(b)(3) that the drain valve not be damaged in the event of a landing with landing gear retracted was not a proper design specification since damage was beyond the control of the manufacturer. The FAA agrees that the language “so that it will not be damaged” is not proper for this requirement, but the FAA believes that the valve, the location of the valve, or both, can be designed to prevent fuel spillage, assuming that a landing is made with the landing gear retracted. The section as adopted has been revised to clarify this intent.

Proposal 2-71. One commentator suggested that proposed § 25.1027(d) be revised to limit the design consideration to sludge or other foreign matter entering the feathering system from the oil tank. The FAA disagrees. Design consideration and flexibility should not be limited to preventing entry of material into the feathering system. All sources of sludge and foreign matter must be considered since the purpose

Proposal 2-64. One commentator recommended that proposed § 25.841(b)(1) be revised to make it clear that the pressure relief function may be combined with the regulating valve. The proposal would delete the requirement that one of the pressure relief valves be a pressure regulating valve, but it would still allow such a design. This was specifically covered in Notice 75-10.

One commentator suggested that the language “passenger or crew compartment” in proposed § 25.841 (b)(8) be changed to read “occupiable area in the cabin” to ensure that a pressure sensor is located in the lower deck service compartment. The FAA believes the language “occupiable area in the cabin” does not clarify the proposed requirements. The language “passenger and crew compartment” is not limited to the main deck of the airplane, but includes a lower deck service compartment even though this lower deck service compartment may not be occupied during takeoff and landing. For clarification, the parenthetical “ ‘ (including upper and lower lobe galleys) ’ ” has been added to § 25.841(b)(8) as adopted.

Proposal 2-65. The proposed change to § 25.853 concerning the certification requirements necessary to permit smoking in transport category airplanes is related to a proposed amendment to § 25.853 that is contained in Airworthiness Review Program, Notice No. 8: Aircraft, Engine and Propeller Airworthiness, and Procedural Proposals (Notice 75-3 1, 40 FR 29410; July 11, 1975). The proposed amendment to § 25.853 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-3 1: Comments submitted for Proposal 2-65 will be considered at that time.

Proposal 2-66. No unfavorable comments were received on the proposal to amend § 25.933(b). Accordingly, the proposal is adopted without substantive change.

Proposal 2-67. A commentator suggested that a cross-reference to § 25.143 should be added to proposed § 25.941. The FAA agrees that the pilot strength limits now set forth in § 25.143 should be referenced in § 25.941 in order to define appropriately what constitutes “exceptional strength on the part of the pilot”. Accordingly, a paragraph (c) has been added to proposed § 25.941 for that purpose.

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One commentator stated that the fuel system for an APU operated on the ground would be unnecessarily subject to the same requirement as the engine fuel system. The FAA does not agree that this is necessary. If certain operating conditions are the same for both the engine fuel system and the APU fuel system, the FAA believes that the requirements during such periods should be the same. The proposal is therefore adopted without substantive change.

Proposal 2-69. One commentator suggested that the language “proof and ultimate factors” in the proposal for new paragraphs (d) and (e) of § 25.979 be revised to be consistent with § 25.301. The FAA agrees that the terminology should be consistent and the section as adopted is reworded to use the term ultimate load.

One commentator questioned whether the design criteria for the pressure fueling system was applicable to fuel tanks and fuel tank vents. The proposed amendment to § 25.979 was not intended to apply to fuel tanks and vents. The section as adopted has been revised to make this clear.

Proposal 2-70. Several commentators questioned the meaning of the term “quick actuation drain valve” in proposed § 25.999(b)(3). The FAA agrees that the term may be subject to misinterpretation and that the provision is complete without the words “quick actuation”.

One commentator asserted that the proposed requirement in § 25.999(b)(3) that the drain valve not be damaged in the event of a landing with landing gear retracted was not a proper design specification since damage was beyond the control of the manufacturer. The FAA agrees that the language “so that it will not be damaged” is not proper for this requirement, but the FAA believes that the valve, the location of the valve, or both, can be designed to prevent fuel spillage, assuming that a landing is made with the landing gear retracted. The section as adopted has been revised to clarify this intent.

Proposal 2-71. One commentator suggested that proposed § 25.1027(d) be revised to limit the design consideration to sludge or other foreign matter entering the feathering system from the oil tank. The FAA disagrees. Design consideration and flexibility should not be limited to preventing entry of material into the feathering system. All sources of sludge and foreign matter must be considered since the purpose

Proposal 2-64. One commentator recommended that proposed § 25.841(b)(1) be revised to make it clear that the pressure relief function may be combined with the regulating valve. The proposal would delete the requirement that one of the pressure relief valves be a pressure regulating valve, but it would still allow such a design. This was specifically covered in Notice 75-10.

One commentator suggested that the language “passenger or crew compartment” in proposed § 25.841 (b)(8) be changed to read “occupiable area in the cabin” to ensure that a pressure sensor is located in the lower deck service compartment. The FAA believes the language “occupiable area in the cabin” does not clarify the proposed requirements. The language “passenger and crew compartment” is not limited to the main deck of the airplane, but includes a lower deck service compartment even though this lower deck service compartment may not be occupied during takeoff and landing. For clarification, the parenthetical “ ‘ (including upper and lower lobe galleys) ’ ” has been added to § 25.841(b)(8) as adopted.

Proposal 2-65. The proposed change to § 25.853 concerning the certification requirements necessary to permit smoking in transport category airplanes is related to a proposed amendment to § 25.853 that is contained in Airworthiness Review Program, Notice No. 8: Aircraft, Engine and Propeller Airworthiness, and Procedural Proposals (Notice 75-3 1, 40 FR 29410; July 11, 1975). The proposed amendment to § 25.853 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-3 1: Comments submitted for Proposal 2-65 will be considered at that time.

Proposal 2-66. No unfavorable comments were received on the proposal to amend § 25.933(b). Accordingly, the proposal is adopted without substantive change.

Proposal 2-67. A commentator suggested that a cross-reference to § 25.143 should be added to proposed § 25.941. The FAA agrees that the pilot strength limits now set forth in § 25.143 should be referenced in § 25.941 in order to define appropriately what constitutes “exceptional strength on the part of the pilot”. Accordingly, a paragraph (c) has been added to proposed § 25.941 for that purpose.

Proposal 2-68. Two commentators agreed with the intent of the proposed § 25.95 l(a) concerning fuel system design and operation of the auxiliary power unit (APU) but requested that it be withdrawn to allow time to review other Part 25 provisions for applicability to APU installations. The FAA does not believe that a further review of Part 25 should in this case, delay completion of this rulemaking action. However, if the FAA determines that the language “auxiliary power unit” should be specifically set forth in other provisions to avoid misinterpretation, the FAA will take action to clarify these provisions.

One commentator stated that the fuel system for an APU operated on the ground would be unnecessarily subject to the same requirement as the engine fuel system. The FAA does not agree that this is necessary. If certain operating conditions are the same for both the engine fuel system and the APU fuel system, the FAA believes that the requirements during such periods should be the same. The proposal is therefore adopted without substantive change.

Proposal 2-69. One commentator suggested that the language “proof and ultimate factors” in the proposal for new paragraphs (d) and (e) of § 25.979 be revised to be consistent with § 25.301. The FAA agrees that the terminology should be consistent and the section as adopted is reworded to use the term ultimate load.

One commentator questioned whether the design criteria for the pressure fueling system was applicable to fuel tanks and fuel tank vents. The proposed amendment to § 25.979 was not intended to apply to fuel tanks and vents. The section as adopted has been revised to make this clear.

Proposal 2-70. Several commentators questioned the meaning of the term “quick actuation drain valve” in proposed § 25.999(b)(3). The FAA agrees that the term may be subject to misinterpretation and that the provision is complete without the words “quick actuation”.

One commentator asserted that the proposed requirement in § 25.999(b)(3) that the drain valve not be damaged in the event of a landing with landing gear retracted was not a proper design specification since damage was beyond the control of the manufacturer. The FAA agrees that the language “so that it will not be damaged” is not proper for this requirement, but the FAA believes that the valve, the location of the valve, or both, can be designed to prevent fuel spillage, assuming that a landing is made with the landing gear retracted. The section as adopted has been revised to clarify this intent.

Proposal 2-71. One commentator suggested that proposed § 25.1027(d) be revised to limit the design consideration to sludge or other foreign matter entering the feathering system from the oil tank. The FAA disagrees. Design consideration and flexibility should not be limited to preventing entry of material into the feathering system. All sources of sludge and foreign matter must be considered since the purpose

Two commentators pointed out that the proposal differs from § 121.341(b) in that the proposal was not limited to the area of the wings that are critical from the standpoint of ice accumulation. The FAA agrees, and the section as adopted has been revised accordingly.

A comment was also received that expressed the belief that under the proposal, illumination or other means of ice detection would not be necessary if the wing was shown to have acceptable ice accumulation characteristics. The FAA does not agree. Unless an operating limitation prohibits operations at night in known or forecast icing conditions, the means set forth are required.

Proposal 2-91. Several commentators said that the proposed change to § 25.1439(b)(2)(ii) concerning standards for mask and eye coverings was premature in view of the current testing being conducted on this type of equipment by the FAA. The FAA agrees that this proposed amendment is premature, and new standards are being considered for a later rulemaking action. The proposed change to § 25.1439(b)(2)(ii) is therefore withdrawn.

No favorable comments were received on the proposal to amend paragraph (a) of § 25.1439. Accordingly, the proposal is adopted without substantive change.

Proposal 2-92. No unfavorable comments were received on the proposal to amend § 25.1515. Accordingly, the proposal is adopted without substantive change.

Proposal 2-93. No unfavorable comments were received on the proposal to amend the heading of § 25.1533 and on the proposal to amend § 25.1533(a). Accordingly, this amendment is adopted without substantive change. For comments related to the withdrawal of the proposed new § 25.1533(c), see Proposal 2-49.

Proposal 2-94. The proposed change to § 25.1549 concerning the marking requirements for powerplant instruments is related to a proposed amendment to § 25.1549 that is contained in Airworthiness Review Program, Notice No. 3: Power-plant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 25.1549 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-94 will be considered at that time.

Proposal 2-95. One commentator took exception to the proposed deletion of the requirement for marking fuel and oil tank capacities at the filler openings in § 25.1557(b). The FAA believes this method of providing the usable fuel tank capacity and the oil tank capacity is no longer necessary. The pilot has the fuel quantity gage and the Airplane Flight Manual, and the servicing personnel usually have no interest in the usable fuel tank capacity. The determination of oil level in oil tanks is usually accomplished with the dipstick. Accordingly, the proposal is adopted without substantive change.

Proposal 2-96. The proposed change to § 25.1581 concerning the Airplane Flight Manual is related to proposed amendment § 25.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 25.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-96 will be considered at that time.

Proposal 2-97. No unfavorable comments were received on the proposal to amend § 25.1583. Accordingly, the proposal is adopted without substantive change.

Proposal 2-98. The proposed change to § 25.1587 concerning performance information is related to a proposed amendment to § 25.1587 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 25.1587 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for proposal 2-98 will be considered at that time.

Proposal 2-99. Two commentators questioned the applicability of proposed § 27.25(c) concerning a total weight that was greater than the maximum weight established under § 27.25(a) and noted that a clarification of the applicable flight requirements was needed. The FAA agrees that proposed § 27.25(c) should be clarified. Proposed §§ 27.25(c) and 29.25(c) are intended to provide only a total weight standard for approving the rotorcraft structure for rotorcraft that will be operated under Part 133. Proposed §§ 27.25(c) and 29.25(c) as adopted have been revised to clarify this intent.

Proposal 2-100. Proposed § 27.65(a)(2)(i) concerning climb gradients for rotorcraft other than helicopters is related to a proposed new § 27.1587(b)(3) that is contained in Airworthiness Review Program, Notice No. 2: Miscellaneous Proposals (Notice 75-10; 40 FR 10802; March 7, 1975). The proposed amendment to § 27.1587 contained in Notice 75-10 is being deferred; see Proposal 2-140. Therefore,

Two commentators pointed out that the proposal differs from § 121.341(b) in that the proposal was not limited to the area of the wings that are critical from the standpoint of ice accumulation. The FAA agrees, and the section as adopted has been revised accordingly.

A comment was also received that expressed the belief that under the proposal, illumination or other means of ice detection would not be necessary if the wing was shown to have acceptable ice accumulation characteristics. The FAA does not agree. Unless an operating limitation prohibits operations at night in known or forecast icing conditions, the means set forth are required.

Proposal 2-91. Several commentators said that the proposed change to § 25.1439(b)(2)(ii) concerning standards for mask and eye coverings was premature in view of the current testing being conducted on this type of equipment by the FAA. The FAA agrees that this proposed amendment is premature, and new standards are being considered for a later rulemaking action. The proposed change to § 25.1439(b)(2)(ii) is therefore withdrawn.

No favorable comments were received on the proposal to amend paragraph (a) of § 25.1439. Accordingly, the proposal is adopted without substantive change.

Proposal 2-92. No unfavorable comments were received on the proposal to amend § 25.1515. Accordingly, the proposal is adopted without substantive change.

Proposal 2-93. No unfavorable comments were received on the proposal to amend the heading of § 25.1533 and on the proposal to amend § 25.1533(a). Accordingly, this amendment is adopted without substantive change. For comments related to the withdrawal of the proposed new § 25.1533(c), see Proposal 2-49.

Proposal 2-94. The proposed change to § 25.1549 concerning the marking requirements for powerplant instruments is related to a proposed amendment to § 25.1549 that is contained in Airworthiness Review Program, Notice No. 3: Power-plant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 25.1549 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-94 will be considered at that time.

Proposal 2-95. One commentator took exception to the proposed deletion of the requirement for marking fuel and oil tank capacities at the filler openings in § 25.1557(b). The FAA believes this method of providing the usable fuel tank capacity and the oil tank capacity is no longer necessary. The pilot has the fuel quantity gage and the Airplane Flight Manual, and the servicing personnel usually have no interest in the usable fuel tank capacity. The determination of oil level in oil tanks is usually accomplished with the dipstick. Accordingly, the proposal is adopted without substantive change.

Proposal 2-96. The proposed change to § 25.1581 concerning the Airplane Flight Manual is related to proposed amendment § 25.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 25.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-96 will be considered at that time.

Proposal 2-97. No unfavorable comments were received on the proposal to amend § 25.1583. Accordingly, the proposal is adopted without substantive change.

Proposal 2-98. The proposed change to § 25.1587 concerning performance information is related to a proposed amendment to § 25.1587 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 25.1587 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for proposal 2-98 will be considered at that time.

Proposal 2-99. Two commentators questioned the applicability of proposed § 27.25(c) concerning a total weight that was greater than the maximum weight established under § 27.25(a) and noted that a clarification of the applicable flight requirements was needed. The FAA agrees that proposed § 27.25(c) should be clarified. Proposed §§ 27.25(c) and 29.25(c) are intended to provide only a total weight standard for approving the rotorcraft structure for rotorcraft that will be operated under Part 133. Proposed §§ 27.25(c) and 29.25(c) as adopted have been revised to clarify this intent.

Proposal 2-100. Proposed § 27.65(a)(2)(i) concerning climb gradients for rotorcraft other than helicopters is related to a proposed new § 27.1587(b)(3) that is contained in Airworthiness Review Program, Notice No. 2: Miscellaneous Proposals (Notice 75-10; 40 FR 10802; March 7, 1975). The proposed amendment to § 27.1587 contained in Notice 75-10 is being deferred; see Proposal 2-140. Therefore,

Proposal 2-116. One commentator objected to the proposals to add new standards concerning turbine engine installations to §§ 27.903 and 29.903 that would be substantively identical to proposed § 23.903(b). The commentator requested that the proposals be withdrawn since helicopter service experience does not indicate that such a standard is necessary and due consideration has not been given to the differences between helicopter and airplane engine control systems. The FAA disagrees. While there are differences between helicopter and airplane engine installations, the FAA believes that the proposals would provide general design requirements relating to engine operating limitations and engine installation requirements and that these engine installation requirements should be paralleled in Parts 23, 27, and 29. Also see Proposal 2-19.

Proposal 2-117. For comments concerning proposed § 27.917(d), see Proposal 2-163.

Proposal 2-118. The proposed change to § 27.927 concerning the torque transmission test is related to a proposed amendment to § 27.927 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 27.927 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-118 will be considered at that time.

Proposal 2-119. No unfavorable comments were received on the proposal to add a new § 27.939(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-120. No unfavorable comments were received on the proposal to amend § 27.977. Accordingly, the proposal is adopted without substantive change.

Proposal 2-121. Two commentators objected to the proposals to amend §§ 27.999(b) and 29.999(b) to require the installation of quick actuation type drain valves that are readily accessible, which can be easily opened and closed, and is either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. The commentators stated that the requirement to include crash landing consideration is not considered appropriate since there are a great number of other areas which must be covered in crash landing conditions. The proposals, however, would require that the fuel system drain valves be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. There are no requirements in the proposal for consideration of crash landing conditions.

In consideration of comments discussed under Proposals 2-26, and 2-70, §§ 27.999-(b)(3)(ii) and 29.999(b)(3)(ii), as adopted, have been clarified to more specifically provide a design consideration.

See Proposals 2-26 and 2-70.

Proposal 2-122. No unfavorable comments were received on the proposal to amend § 27.1043(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-123. No unfavorable comments were received on the proposal to add a new § 27.1093(c). The proposal as adopted has been editorially changed to agree with the format of the current section.

Proposal 2-124. No unfavorable comments were received on the proposal to add a new § 27.1123. Accordingly, the proposal is adopted without substantive change.

Proposal 2-125. No unfavorable comments were received on the proposal to add a new § 27.1143(d), and the proposal is adopted without substantive change. However, the heading of § 27.1143 has been amended to reflect the contents of the section after the adoption of a new paragraph (d).

Proposal 2-126. No unfavorable comments were received on the proposal to amend § 27.1185. Accordingly, the proposal is adopted without substantive change.

Proposal 2-127. For comments related to proposed amendment of § 27.1322, see Proposals 2-34 and 2-82.

Proposal 2-128. The proposed change to § 27.1325 concerning the static pressure sources is related to a proposed amendment to § 27.1325 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposed amendment to § 27.1325 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-128 will be considered at that time.

Proposal 2-129. The proposal for a new § 27.1329 concerning the standards for automatic pilot systems is related to a proposed new § 27.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and System Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The

Proposal 2-116. One commentator objected to the proposals to add new standards concerning turbine engine installations to §§ 27.903 and 29.903 that would be substantively identical to proposed § 23.903(b). The commentator requested that the proposals be withdrawn since helicopter service experience does not indicate that such a standard is necessary and due consideration has not been given to the differences between helicopter and airplane engine control systems. The FAA disagrees. While there are differences between helicopter and airplane engine installations, the FAA believes that the proposals would provide general design requirements relating to engine operating limitations and engine installation requirements and that these engine installation requirements should be paralleled in Parts 23, 27, and 29. Also see Proposal 2-19.

Proposal 2-117. For comments concerning proposed § 27.917(d), see Proposal 2-163.

Proposal 2-118. The proposed change to § 27.927 concerning the torque transmission test is related to a proposed amendment to § 27.927 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 27.927 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-118 will be considered at that time.

Proposal 2-119. No unfavorable comments were received on the proposal to add a new § 27.939(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-120. No unfavorable comments were received on the proposal to amend § 27.977. Accordingly, the proposal is adopted without substantive change.

Proposal 2-121. Two commentators objected to the proposals to amend §§ 27.999(b) and 29.999(b) to require the installation of quick actuation type drain valves that are readily accessible, which can be easily opened and closed, and is either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. The commentators stated that the requirement to include crash landing consideration is not considered appropriate since there are a great number of other areas which must be covered in crash landing conditions. The proposals, however, would require that the fuel system drain valves be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. There are no requirements in the proposal for consideration of crash landing conditions.

In consideration of comments discussed under Proposals 2-26, and 2-70, §§ 27.999-(b)(3)(ii) and 29.999(b)(3)(ii), as adopted, have been clarified to more specifically provide a design consideration.

See Proposals 2-26 and 2-70.

Proposal 2-122. No unfavorable comments were received on the proposal to amend § 27.1043(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-123. No unfavorable comments were received on the proposal to add a new § 27.1093(c). The proposal as adopted has been editorially changed to agree with the format of the current section.

Proposal 2-124. No unfavorable comments were received on the proposal to add a new § 27.1123. Accordingly, the proposal is adopted without substantive change.

Proposal 2-125. No unfavorable comments were received on the proposal to add a new § 27.1143(d), and the proposal is adopted without substantive change. However, the heading of § 27.1143 has been amended to reflect the contents of the section after the adoption of a new paragraph (d).

Proposal 2-126. No unfavorable comments were received on the proposal to amend § 27.1185. Accordingly, the proposal is adopted without substantive change.

Proposal 2-127. For comments related to proposed amendment of § 27.1322, see Proposals 2-34 and 2-82.

Proposal 2-128. The proposed change to § 27.1325 concerning the static pressure sources is related to a proposed amendment to § 27.1325 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposed amendment to § 27.1325 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-128 will be considered at that time.

Proposal 2-129. The proposal for a new § 27.1329 concerning the standards for automatic pilot systems is related to a proposed new § 27.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and System Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The

Proposal 2-116. One commentator objected to the proposals to add new standards concerning turbine engine installations to §§ 27.903 and 29.903 that would be substantively identical to proposed § 23.903(b). The commentator requested that the proposals be withdrawn since helicopter service experience does not indicate that such a standard is necessary and due consideration has not been given to the differences between helicopter and airplane engine control systems. The FAA disagrees. While there are differences between helicopter and airplane engine installations, the FAA believes that the proposals would provide general design requirements relating to engine operating limitations and engine installation requirements and that these engine installation requirements should be paralleled in Parts 23, 27, and 29. Also see Proposal 2-19.

Proposal 2-117. For comments concerning proposed § 27.917(d), see Proposal 2-163.

Proposal 2-118. The proposed change to § 27.927 concerning the torque transmission test is related to a proposed amendment to § 27.927 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 27.927 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-118 will be considered at that time.

Proposal 2-119. No unfavorable comments were received on the proposal to add a new § 27.939(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-120. No unfavorable comments were received on the proposal to amend § 27.977. Accordingly, the proposal is adopted without substantive change.

Proposal 2-121. Two commentators objected to the proposals to amend §§ 27.999(b) and 29.999(b) to require the installation of quick actuation type drain valves that are readily accessible, which can be easily opened and closed, and is either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. The commentators stated that the requirement to include crash landing consideration is not considered appropriate since there are a great number of other areas which must be covered in crash landing conditions. The proposals, however, would require that the fuel system drain valves be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. There are no requirements in the proposal for consideration of crash landing conditions.

In consideration of comments discussed under Proposals 2-26, and 2-70, §§ 27.999-(b)(3)(ii) and 29.999(b)(3)(ii), as adopted, have been clarified to more specifically provide a design consideration.

See Proposals 2-26 and 2-70.

Proposal 2-122. No unfavorable comments were received on the proposal to amend § 27.1043(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-123. No unfavorable comments were received on the proposal to add a new § 27.1093(c). The proposal as adopted has been editorially changed to agree with the format of the current section.

Proposal 2-124. No unfavorable comments were received on the proposal to add a new § 27.1123. Accordingly, the proposal is adopted without substantive change.

Proposal 2-125. No unfavorable comments were received on the proposal to add a new § 27.1143(d), and the proposal is adopted without substantive change. However, the heading of § 27.1143 has been amended to reflect the contents of the section after the adoption of a new paragraph (d).

Proposal 2-126. No unfavorable comments were received on the proposal to amend § 27.1185. Accordingly, the proposal is adopted without substantive change.

Proposal 2-127. For comments related to proposed amendment of § 27.1322, see Proposals 2-34 and 2-82.

Proposal 2-128. The proposed change to § 27.1325 concerning the static pressure sources is related to a proposed amendment to § 27.1325 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposed amendment to § 27.1325 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-128 will be considered at that time.

Proposal 2-129. The proposal for a new § 27.1329 concerning the standards for automatic pilot systems is related to a proposed new § 27.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and System Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The

Proposal 2-116. One commentator objected to the proposals to add new standards concerning turbine engine installations to §§ 27.903 and 29.903 that would be substantively identical to proposed § 23.903(b). The commentator requested that the proposals be withdrawn since helicopter service experience does not indicate that such a standard is necessary and due consideration has not been given to the differences between helicopter and airplane engine control systems. The FAA disagrees. While there are differences between helicopter and airplane engine installations, the FAA believes that the proposals would provide general design requirements relating to engine operating limitations and engine installation requirements and that these engine installation requirements should be paralleled in Parts 23, 27, and 29. Also see Proposal 2-19.

Proposal 2-117. For comments concerning proposed § 27.917(d), see Proposal 2-163.

Proposal 2-118. The proposed change to § 27.927 concerning the torque transmission test is related to a proposed amendment to § 27.927 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866; May 19, 1975). The proposed amendment to § 27.927 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposal 2-118 will be considered at that time.

Proposal 2-119. No unfavorable comments were received on the proposal to add a new § 27.939(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-120. No unfavorable comments were received on the proposal to amend § 27.977. Accordingly, the proposal is adopted without substantive change.

Proposal 2-121. Two commentators objected to the proposals to amend §§ 27.999(b) and 29.999(b) to require the installation of quick actuation type drain valves that are readily accessible, which can be easily opened and closed, and is either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. The commentators stated that the requirement to include crash landing consideration is not considered appropriate since there are a great number of other areas which must be covered in crash landing conditions. The proposals, however, would require that the fuel system drain valves be either located or protected so that it will not be damaged in the event of a landing with landing gear retracted. There are no requirements in the proposal for consideration of crash landing conditions.

In consideration of comments discussed under Proposals 2-26, and 2-70, §§ 27.999-(b)(3)(ii) and 29.999(b)(3)(ii), as adopted, have been clarified to more specifically provide a design consideration.

See Proposals 2-26 and 2-70.

Proposal 2-122. No unfavorable comments were received on the proposal to amend § 27.1043(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-123. No unfavorable comments were received on the proposal to add a new § 27.1093(c). The proposal as adopted has been editorially changed to agree with the format of the current section.

Proposal 2-124. No unfavorable comments were received on the proposal to add a new § 27.1123. Accordingly, the proposal is adopted without substantive change.

Proposal 2-125. No unfavorable comments were received on the proposal to add a new § 27.1143(d), and the proposal is adopted without substantive change. However, the heading of § 27.1143 has been amended to reflect the contents of the section after the adoption of a new paragraph (d).

Proposal 2-126. No unfavorable comments were received on the proposal to amend § 27.1185. Accordingly, the proposal is adopted without substantive change.

Proposal 2-127. For comments related to proposed amendment of § 27.1322, see Proposals 2-34 and 2-82.

Proposal 2-128. The proposed change to § 27.1325 concerning the static pressure sources is related to a proposed amendment to § 27.1325 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposed amendment to § 27.1325 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-128 will be considered at that time.

Proposal 2-129. The proposal for a new § 27.1329 concerning the standards for automatic pilot systems is related to a proposed new § 27.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and System Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The

Proposal 2-179. No unfavorable comments were received on the proposal to amend § 29.1197(a). Accordingly, the proposal is adopted without substantive change.

Proposal 2-180. For comments related to the proposed amendment of § 29.1303(d), see Proposal 2-79.

Proposal 2-181. No unfavorable comments were received on the proposal to amend § 29.1307. Accordingly, the proposal is adopted without substantive change.

Proposal 2-182. For comments related to proposed amendment of § 29.1322, see Proposals 2-34 and 2-82.

Proposal 2-183. For comments related to the deferral of proposed § 29.1325, see Proposal 2-35.

Proposal 2-184. The proposed change to § 29.1329 concerning automatic pilot systems is related to a proposed new § 29.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposal for § 29.1329 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-184 will be considered at that time.

Proposal 2-185. The proposed change to § 29.1337 concerning the auxiliary power unit instrument lines is related to a proposed amendment to § 29.1337 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866, May 19, 1975). The proposed amendments to § 29.1337 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposals 2-185 will be considered at that time.

Proposal 2-186. Proposed § 29.1353(c)(5) concerning nickel-cadmium batteries is related to a proposed amendment to § 29.1585 that is contained in airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 25664; June 9, 1975). The proposed amendment to § 29.1353(c)(5) contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-186 will be considered at that time.

Proposal 2-187. For comments related to the proposed amendment of § 29.1385 and the withdrawal of the proposal, see Proposal 2-89.

Proposal 2-188. The proposal for § 29.1545 concerning the V_{ne} requirements is related to a proposed amendment to § 29.1505 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1545 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposals 2-188 will be considered at that time.

Proposal 2-189. For comments related to the proposed amendment of § 29.1549, see Proposal 2-42.

Proposal 2-190. No unfavorable comments were received on the proposal to amend § 29.1555(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-191. No unfavorable comments were received on the proposal to amend § 29.1557(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-192. The proposed change to § 29.1581 concerning the Airplane Flight Manual is related to a proposed amendment to § 29.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-192 will be considered at that time.

Proposal 2-193. No unfavorable comments were received on the proposal to amend § 3 1.1. Accordingly, the proposal is adopted without substantive change.

Proposal 2-194. No unfavorable comments were received on the proposal to amend §§ 3 1.11 and 3 1.20. Accordingly, the proposal is adopted without substantive change.

Proposal 2-195. No unfavorable comment was received on the proposal to add a new § 3 1.14 concerning weight limits of manned free balloons. Therefore, the section is adopted without substantive change.

Proposal 2-196. No unfavorable comments were received on the proposal to amend § 3 1.45. Accordingly, the proposal is adopted without substantive change.

Proposal 2-179. No unfavorable comments were received on the proposal to amend § 29.1197(a). Accordingly, the proposal is adopted without substantive change.

Proposal 2-180. For comments related to the proposed amendment of § 29.1303(d), see Proposal 2-79.

Proposal 2-181. No unfavorable comments were received on the proposal to amend § 29.1307. Accordingly, the proposal is adopted without substantive change.

Proposal 2-182. For comments related to proposed amendment of § 29.1322, see Proposals 2-34 and 2-82.

Proposal 2-183. For comments related to the deferral of proposed § 29.1325, see Proposal 2-35.

Proposal 2-184. The proposed change to § 29.1329 concerning automatic pilot systems is related to a proposed new § 29.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposal for § 29.1329 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-184 will be considered at that time.

Proposal 2-185. The proposed change to § 29.1337 concerning the auxiliary power unit instrument lines is related to a proposed amendment to § 29.1337 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866, May 19, 1975). The proposed amendments to § 29.1337 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposals 2-185 will be considered at that time.

Proposal 2-186. Proposed § 29.1353(c)(5) concerning nickel-cadium batteries is related to a proposed amendment to § 29.1585 that is contained in airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 25664; June 9, 1975). The proposed amendment to § 29.1353(c)(5) contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-186 will be considered at that time.

Proposal 2-187. For comments related to the proposed amendment of § 29.1385 and the withdrawal of the proposal, see Proposal 2-89.

Proposal 2-188. The proposal for § 29.1545 concerning the V_{ne} requirements is related to a proposed amendment to § 29.1505 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1545 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposals 2-188 will be considered at that time.

Proposal 2-189. For comments related to the proposed amendment of § 29.1549, see Proposal 2-42.

Proposal 2-190. No unfavorable comments were received on the proposal to amend § 29.1555(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-191. No unfavorable comments were received on the proposal to amend § 29.1557(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-192. The proposed change to § 29.1581 concerning the Airplane Flight Manual is related to a proposed amendment to § 29.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-192 will be considered at that time.

Proposal 2-193. No unfavorable comments were received on the proposal to amend § 3 1.1. Accordingly, the proposal is adopted without substantive change.

Proposal 2-194. No unfavorable comments were received on the proposal to amend §§ 3 1.11 and 3 1.20. Accordingly, the proposal is adopted without substantive change.

Proposal 2-195. No unfavorable comment was received on the proposal to add a new § 3 1.14 concerning weight limits of manned free balloons. Therefore, the section is adopted without substantive change.

Proposal 2-196. No unfavorable comments were received on the proposal to amend § 3 1.45. Accordingly, the proposal is adopted without substantive change.

Proposal 2-179. No unfavorable comments were received on the proposal to amend § 29.1197(a). Accordingly, the proposal is adopted without substantive change.

Proposal 2-180. For comments related to the proposed amendment of § 29.1303(d), see Proposal 2-79.

Proposal 2-181. No unfavorable comments were received on the proposal to amend § 29.1307. Accordingly, the proposal is adopted without substantive change.

Proposal 2-182. For comments related to proposed amendment of § 29.1322, see Proposals 2-34 and 2-82.

Proposal 2-183. For comments related to the deferral of proposed § 29.1325, see Proposal 2-35.

Proposal 2-184. The proposed change to § 29.1329 concerning automatic pilot systems is related to a proposed new § 29.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposal for § 29.1329 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-184 will be considered at that time.

Proposal 2-185. The proposed change to § 29.1337 concerning the auxiliary power unit instrument lines is related to a proposed amendment to § 29.1337 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866, May 19, 1975). The proposed amendments to § 29.1337 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposals 2-185 will be considered at that time.

Proposal 2-186. Proposed § 29.1353(c)(5) concerning nickel-cadium batteries is related to a proposed amendment to § 29.1585 that is contained in airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 25664; June 9, 1975). The proposed amendment to § 29.1353(c)(5) contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-186 will be considered at that time.

Proposal 2-187. For comments related to the proposed amendment of § 29.1385 and the withdrawal of the proposal, see Proposal 2-89.

Proposal 2-188. The proposal for § 29.1545 concerning the V_{ne} requirements is related to a proposed amendment to § 29.1505 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1545 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposals 2-188 will be considered at that time.

Proposal 2-189. For comments related to the proposed amendment of § 29.1549, see Proposal 2-42.

Proposal 2-190. No unfavorable comments were received on the proposal to amend § 29.1555(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-191. No unfavorable comments were received on the proposal to amend § 29.1557(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-192. The proposed change to § 29.1581 concerning the Airplane Flight Manual is related to a proposed amendment to § 29.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-192 will be considered at that time.

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Proposal 2-194. No unfavorable comments were received on the proposal to amend §§ 3 1.11 and 3 1.20. Accordingly, the proposal is adopted without substantive change.

Proposal 2-195. No unfavorable comment was received on the proposal to add a new § 3 1.14 concerning weight limits of manned free balloons. Therefore, the section is adopted without substantive change.

Proposal 2-196. No unfavorable comments were received on the proposal to amend § 3 1.45. Accordingly, the proposal is adopted without substantive change.

Proposal 2-179. No unfavorable comments were received on the proposal to amend § 29.1197(a). Accordingly, the proposal is adopted without substantive change.

Proposal 2-180. For comments related to the proposed amendment of § 29.1303(d), see Proposal 2-79.

Proposal 2-181. No unfavorable comments were received on the proposal to amend § 29.1307. Accordingly, the proposal is adopted without substantive change.

Proposal 2-182. For comments related to proposed amendment of § 29.1322, see Proposals 2-34 and 2-82.

Proposal 2-183. For comments related to the deferral of proposed § 29.1325, see Proposal 2-35.

Proposal 2-184. The proposed change to § 29.1329 concerning automatic pilot systems is related to a proposed new § 29.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposal for § 29.1329 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-184 will be considered at that time.

Proposal 2-185. The proposed change to § 29.1337 concerning the auxiliary power unit instrument lines is related to a proposed amendment to § 29.1337 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866, May 19, 1975). The proposed amendments to § 29.1337 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposals 2-185 will be considered at that time.

Proposal 2-186. Proposed § 29.1353(c)(5) concerning nickel-cadium batteries is related to a proposed amendment to § 29.1585 that is contained in airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 25664; June 9, 1975). The proposed amendment to § 29.1353(c)(5) contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-186 will be considered at that time.

Proposal 2-187. For comments related to the proposed amendment of § 29.1385 and the withdrawal of the proposal, see Proposal 2-89.

Proposal 2-188. The proposal for § 29.1545 concerning the V_{ne} requirements is related to a proposed amendment to § 29.1505 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1545 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposals 2-188 will be considered at that time.

Proposal 2-189. For comments related to the proposed amendment of § 29.1549, see Proposal 2-42.

Proposal 2-190. No unfavorable comments were received on the proposal to amend § 29.1555(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-191. No unfavorable comments were received on the proposal to amend § 29.1557(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-192. The proposed change to § 29.1581 concerning the Airplane Flight Manual is related to a proposed amendment to § 29.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-192 will be considered at that time.

Proposal 2-193. No unfavorable comments were received on the proposal to amend § 3.1.1. Accordingly, the proposal is adopted without substantive change.

Proposal 2-194. No unfavorable comments were received on the proposal to amend §§ 3.1.11 and 3.1.20. Accordingly, the proposal is adopted without substantive change.

Proposal 2-195. No unfavorable comment was received on the proposal to add a new § 3.1.14 concerning weight limits of manned free balloons. Therefore, the section is adopted without substantive change.

Proposal 2-196. No unfavorable comments were received on the proposal to amend § 31.45. Accordingly, the proposal is adopted without substantive change.

Proposal 2-179. No unfavorable comments were received on the proposal to amend § 29.1197(a). Accordingly, the proposal is adopted without substantive change.

Proposal 2-180. For comments related to the proposed amendment of § 29.1303(d), see Proposal 2-79.

Proposal 2-181. No unfavorable comments were received on the proposal to amend § 29.1307. Accordingly, the proposal is adopted without substantive change.

Proposal 2-182. For comments related to proposed amendment of § 29.1322, see Proposals 2-34 and 2-82.

Proposal 2-183. For comments related to the deferral of proposed § 29.1325, see Proposal 2-35.

Proposal 2-184. The proposed change to § 29.1329 concerning automatic pilot systems is related to a proposed new § 29.1311 that is contained in Airworthiness Review Program, Notice No. 5: Equipment and Systems Proposals (Notice 75-23; 40 FR 23048; May 27, 1975). The proposal for § 29.1329 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-23. Comments submitted for Proposal 2-184 will be considered at that time.

Proposal 2-185. The proposed change to § 29.1337 concerning the auxiliary power unit instrument lines is related to a proposed amendment to § 29.1337 that is contained in Airworthiness Review Program, Notice No. 3: Powerplant Proposals (Notice 75-19; 40 FR 21866, May 19, 1975). The proposed amendments to § 29.1337 contained in Notice No. 2 is therefore deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-19. Comments submitted for Proposals 2-185 will be considered at that time.

Proposal 2-186. Proposed § 29.1353(c)(5) concerning nickel-cadium batteries is related to a proposed amendment to § 29.1585 that is contained in airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 25664; June 9, 1975). The proposed amendment to § 29.1353(c)(5) contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-186 will be considered at that time.

Proposal 2-187. For comments related to the proposed amendment of § 29.1385 and the withdrawal of the proposal, see Proposal 2-89.

Proposal 2-188. The proposal for § 29.1545 concerning the V_{ne} requirements is related to a proposed amendment to § 29.1505 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1545 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposals 2-188 will be considered at that time.

Proposal 2-189. For comments related to the proposed amendment of § 29.1549, see Proposal 2-42.

Proposal 2-190. No unfavorable comments were received on the proposal to amend § 29.1555(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-191. No unfavorable comments were received on the proposal to amend § 29.1557(c). Accordingly, the proposal is adopted without substantive change.

Proposal 2-192. The proposed change to § 29.1581 concerning the Airplane Flight Manual is related to a proposed amendment to § 29.1581 that is contained in Airworthiness Review Program, Notice No. 6: Flight Proposals (Notice 75-25; 40 FR 24664; June 9, 1975). The proposed amendment to § 29.1581 contained in Notice No. 2 is therefore being deferred until final rulemaking action is taken with respect to the related proposal in Notice 75-25. Comments submitted for Proposal 2-192 will be considered at that time.

Proposal 2-193. No unfavorable comments were received on the proposal to amend § 3.1.1. Accordingly, the proposal is adopted without substantive change.

Proposal 2-194. No unfavorable comments were received on the proposal to amend §§ 3.1.11 and 3.1.20. Accordingly, the proposal is adopted without substantive change.

Proposal 2-195. No unfavorable comment was received on the proposal to add a new § 3.1.14 concerning weight limits of manned free balloons. Therefore, the section is adopted without substantive change.

Proposal 2-196. No unfavorable comments were received on the proposal to amend § 31.45. Accordingly, the proposal is adopted without substantive change.

for certification of previously **uncertificated** operators, the FAA also considered the benefits to be derived from Part 133 certification. The FAA believes these benefits should be provided as soon as possible after these amendments become effective. Accordingly, § 133.11 allows 120 days for those operators who now operate under Part 91 to apply for and be issued a certificate under Part 133. They are not allowed, however, to operate for compensation or hire until they have been certificated under Part 133.

The proposal to amend § 133.13 to limit the duration of a Part 133 certificate to 24 calendar months drew objections from several **commenters**. They contended that the proposal was merely an unjustified encroachment of the FAA on rotorcraft external-load operations, and would impose administrative burdens on both the operators and the FAA. Other **commenters** stated that the proposals would be acceptable if the renewal process was simple and conducted expeditiously by district offices.

In proposing to limit the duration of a Part 133 certificate in § 133.13, the FAA considered the impact of the action on the inspection and administrative workload of Flight Standards district offices. The increased workload will not be so substantial as to have an adverse effect on the effectiveness of the certification program. Limiting the duration of Part 133 certificates to 24 calendar months, with attendant renewal requirements, will enable district offices to exercise the necessary control over the certificate holders and particularly over the new certificate holders who will not be certificated under Part 133. In addition § 133.13 is amended to provide that a certificate issued before the effective date of this amendment remains in effect for up to 24 calendar months after that date.

Although not treated in the notice, § 133.3 1 (f) must be amended to make it clear that standard category rotorcraft may continue to be operated over congested areas. This is necessary, because § 133.45(e) as adopted prohibits restricted category rotorcraft external-load operation over a densely populated area, in congested airway or near a busy airport where passenger transport operations are conducted.

No adverse comments were received on the proposed change to § 91.79(c) which would except rotorcraft used in Part 133 external-load operations from the minimum altitude requirements of that section. On further study, the FAA has determined that it is more appropriate to provide this relief through an amendment to § 133.31. A similar approach was taken with respect to agricultural operations in § 137.49, and keeps the number of cross-references to other Parts to a minimum in Part 133.

A proposed change to § 133.43(c) would apply the weight and center of gravity limitations of that section to rotorcraft type certificated in the restricted category under § 21.25. This is no longer necessary because § 133.43 was amended as part of the Airworthiness Review Program (see Amendment No. 133-5; 41 FR 55454; December 20, 1976).

No adverse comments were received on the proposed change to § 133.51. This amendment will confine the applicability of § 133.5 1 to a standard category rotorcraft. A separate airworthiness certificate is not necessary for rotorcraft certificated in the restricted category for the purpose of carrying external loads.

In addition to the major revisions to Part 133 discussed above, other minor or clarifying changes have been made that were not discussed in Notice 75-38. Section 133.15 is amended to include certificate renewal procedures similar to the procedures currently in that section for initial certification. Section 133.19 is amended to clarify the fact that the exclusive use prerequisite to Part 133 certification requires a rotorcraft with either a valid standard category or a valid restricted category airworthiness certificate.

Interested persons have been afforded an opportunity to participate in the making of this rule, and due consideration has been given to all relevant matter presented.

The principal authors of this document are Clifford L. Weaver, Flight Standards Service, and Richard B. Elwell, Office of the Chief Counsel.

Accordingly, Parts 91 and 133 of the Federal Aviation Regulations (14 CFR Parts 91 and 133) are revised, effective August 10, 1977.

(Secs. 307, 313(a), 601, 603, and 607 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421, 1423 and 1427), and sec. 6(c)) of the Department of Transportation Act (49 U.S.C. 655(c)).

The Federal Aviation Administration has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, 11949, and OMB Circular A-107.

for certification of previously **uncertificated** operators, the FAA also considered the benefits to be derived from Part 133 certification. The FAA believes these benefits should be provided as soon as possible after these amendments become effective. Accordingly, § 133.11 allows 120 days for those operators who now operate under Part 91 to apply for and be issued a certificate under Part 133. They are not allowed, however, to operate for compensation or hire until they have been certificated under Part 133.

The proposal to amend § 133.13 to limit the duration of a Part 133 certificate to 24 calendar months drew objections from several **commenters**. They contended that the proposal was merely an unjustified encroachment of the FAA on rotorcraft external-load operations, and would impose administrative burdens on both the operators and the FAA. Other **commenters** stated that the proposals would be acceptable if the renewal process was simple and conducted expeditiously by district offices.

In proposing to limit the duration of a Part 133 certificate in § 133.13, the FAA considered the impact of the action on the inspection and administrative workload of Flight Standards district offices. The increased workload will not be so substantial as to have an adverse effect on the effectiveness of the certification program. Limiting the duration of Part 133 certificates to 24 calendar months, with attendant renewal requirements, will enable district offices to exercise the necessary control over the certificate holders and particularly over the new certificate holders who will not be certificated under Part 133. In addition § 133.13 is amended to provide that a certificate issued before the effective date of this amendment remains in effect for up to 24 calendar months after that date.

Although not treated in the notice, § 133.3 1 (f) must be amended to make it clear that standard category rotorcraft may continue to be operated over congested areas. This is necessary, because § 133.45(e) as adopted prohibits restricted category rotorcraft external-load operation over a densely populated area, in congested airway or near a busy airport where passenger transport operations are conducted.

No adverse comments were received on the proposed change to § 91.79(c) which would except rotorcraft used in Part 133 external-load operations from the minimum altitude requirements of that section. On further study, the FAA has determined that it is more appropriate to provide this relief through an amendment to § 133.31. A similar approach was taken with respect to agricultural operations in § 137.49, and keeps the number of cross-references to other Parts to a minimum in Part 133.

A proposed change to § 133.43(c) would apply the weight and center of gravity limitations of that section to rotorcraft type certificated in the restricted category under § 21.25. This is no longer necessary because § 133.43 was amended as part of the Airworthiness Review Program (see Amendment No. 133-5; 41 FR 55454; December 20, 1976).

No adverse comments were received on the proposed change to § 133.51. This amendment will confine the applicability of § 133.5 1 to a standard category rotorcraft. A separate airworthiness certificate is not necessary for rotorcraft certificated in the restricted category for the purpose of carrying external loads.

In addition to the major revisions to Part 133 discussed above, other minor or clarifying changes have been made that were not discussed in Notice 75-38. Section 133.15 is amended to include certificate renewal procedures similar to the procedures currently in that section for initial certification. Section 133.19 is amended to clarify the fact that the exclusive use prerequisite to Part 133 certification requires a rotorcraft with either a valid standard category or a valid restricted category airworthiness certificate.

Interested persons have been afforded an opportunity to participate in the making of this rule, and due consideration has been given to all relevant matter presented.

The principal authors of this document are Clifford L. Weaver, Flight Standards Service, and Richard B. Elwell, Office of the Chief Counsel.

Accordingly, Parts 91 and 133 of the Federal Aviation Regulations (14 CFR Parts 91 and 133) are revised, effective August 10, 1977.

(Secs. 307, 313(a), 601, 603, and 607 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421, 1423 and 1427), and sec. 6(c)) of the Department of Transportation Act (49 U.S.C. 655(c)).

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Interested persons have been afforded an opportunity to participate in the making of this rule, and due consideration has been given to all relevant matter presented.

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The Federal Aviation Administration has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821, 11949, and OMB Circular A-107.

language in § 11.41 has been changed to more accurately reflect the fact that exemptions **are** requested “from the requirements of” Part 139 and not “filed under” that part.

Effective Date and Request for Comments

Since these amendments are procedural in nature and implement existing statutory authority, notice and opportunity for public comment is not required. In addition, since these amendments are procedural and do not impose an additional burden, good cause exists for making them effective less than 30 days after publication. However, the FAA contemplates a review of the procedures established by these amendments after they have been in operation for at least twelve months. Interested persons are invited to submit such comments as they may desire with respect to these amendments. Communications should identify the regulatory docket number and be submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket AGC-24, 800 Independence Avenue, S.W., Washington, D.C. 20591. All comments received on or before March 9, 1979, will be considered during the review, and will be available both before and after that date in Rules Docket for examination by interested persons.

Adoption of the Amendments

Accordingly, Parts 11, 121, 127, 133, 137, and 139 of the Federal Aviation Regulations (14 CFR Parts 11, 121, 137, 133, 137, and 139) are effective November 9, 1978.

(Secs. 313 and 601 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1354 and 1421); Sec. 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).)

The Federal Aviation Administration has determined that this document is not significant in accordance with the criteria required by Executive Order 12044, and set forth in the proposed “Department of Transportation Regulatory Policies and Procedures” published in the FEDERAL REGISTER June 1, 1978 (43 FR 23925). In addition, these amendments are procedural in nature and the Federal Aviation Administration has determined that the expected impact of these amendments is no minimal that they do not require an evaluation.

Amendment 133-9

Rotorcraft Regulatory Review Program Amendment No. 5: Operations and Maintenance

Adopted: October 31, 1986

Effective: January 6, 1987

(Published in 51FR 40692, November 7, 1986)

SUMMARY: This rule amends and updates the operations and maintenance requirements pertaining to rotorcraft and establishes a new Class D rotorcraft-load combination. Amendments affect certain sections of Parts 1, 43, 45, 61, 91, 133, and 135 of the Federal Aviation Regulations that apply to rotorcraft.

FOR FURTHER INFORMATION CONTACT: Marian Clemens or Thomas Stuckey, Project Development Branch (AFS-850), General Aviation and Commercial Division, Office of Flight Standards, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591; Telephone (202) 267-8150.

SUPPLEMENTARY INFORMATION:

Background

On January 5, 1979, the Federal Aviation Administration (FAA) gave notice of its Rotorcraft Regulatory Review Program and invited all interested persons to submit proposals for consideration during a forthcoming Rotorcraft Regulatory Review Conference (Notice 79-1; 43 FR 23925). Such a Rotorcraft Regulatory Review Conference was held on December 10-14, 1979, in New Orleans, Louisiana. A subsequent Rotorcraft Regulatory Review Meeting was held August 16-20, 1980, in Washington, D.C.

After the conference and meeting, the FAA developed plans to publish a series of five notices of proposed rulemaking. The first notice included proposals dealing with the applicability sections of Parts 27 and 29 of the Federal Aviation Regulations (FAR), plus Instrument Flight Rules (IFR) certification and icing criteria. These were subsequently adopted as a final rule effective March 2, 1983 (48 FR 4374; January 31, 1983). The second notice addressed airworthiness standards for type certification of normal and transport category rotorcraft. Amendments based upon that notice were subsequently published in the **Federal Register** on November 6, 1984 (49 FR 44422), and were effective December 6, 1984.

language in § 11.41 has been changed to more accurately reflect the fact that exemptions **are** requested “from the requirements of” Part 139 and not “filed under” that part.

Effective Date and Request for Comments

Since these amendments are procedural in nature and implement existing statutory authority, notice and opportunity for public comment is not required. In addition, since these amendments are procedural and do not impose an additional burden, good cause exists for making them effective less than 30 days after publication. However, the FAA contemplates a review of the procedures established by these amendments after they have been in operation for at least twelve months. Interested persons are invited to submit such comments as they may desire with respect to these amendments. Communications should identify the regulatory docket number and be submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket AGC-24, 800 Independence Avenue, S.W., Washington, D.C. 20591. All comments received on or before March 9, 1979, will be considered during the review, and will be available both before and after that date in Rules Docket for examination by interested persons.

Adoption of the Amendments

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language in § 11.41 has been changed to more accurately reflect the fact that exemptions **are** requested “from the requirements of” Part 139 and not “filed under” that part.

Effective Date and Request for Comments

Since these amendments are procedural in nature and implement existing statutory authority, notice and opportunity for public comment is not required. In addition, since these amendments are procedural and do not impose an additional burden, good cause exists for making them effective less than 30 days after publication. However, the FAA contemplates a review of the procedures established by these amendments after they have been in operation for at least twelve months. Interested persons are invited to submit such comments as they may desire with respect to these amendments. Communications should identify the regulatory docket number and be submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket AGC-24, 800 Independence Avenue, S.W., Washington, D.C. 20591. All comments received on or before March 9, 1979, will be considered during the review, and will be available both before and after that date in Rules Docket for examination by interested persons.

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Section 61.105 Aeronautical knowledge.**Section 61.107 Flight proficiency.**

No public comments were received on § 61.57, § 61.67, § 61.87, § 61.105, or § 61.107, and they are amended as proposed.

Section 61.113 Rotorcraft rating: Aeronautical experience.

Regarding the requirements for a helicopter class rating for a private pilot's license, one commenter suggests that the number of takeoffs and landings required in paragraph (a)(1)(ii) should be reduced to five, or alternatively, that the phrase "en route phase of flight" should be deleted. According to the commenter, if each landing/takeoff operation is separated by an en route phase of flight, an undue economic burden would be placed on the student since "the majority of these operations will be airport-to-airport." The commenter also points out that in some parts of the western United States, suitable night landing areas may be separated by distances in excess of 50 miles.

The FAA has not accepted the requested change for the following reason: The proposed aeronautical experience requirements were discussed at the conference, and it was the consensus that these specific experience requirements are needed to adequately train and prepare a private pilot applicant for a class rating in present-day rotorcraft. It should also be noted that ten takeoffs and landings are required for a private pilot's certificate in an airplane, which is less difficult to operate than a helicopter. It is the position of the FAA that, by increasing the level of aeronautical experience for helicopters, the agency is promoting increased levels of safety. The requirement for ten takeoffs and landings is therefore adopted in the final rule.

The phrase "en route phase of flight" is a necessary part of the regulation, designed to prevent the applicant from merely lifting the helicopter above a given spot, hovering, and then returning it to that spot to achieve the required number of takeoffs and landings. Eliminating the requirement for an "en route phase of flight" would enable the applicant to circumvent the need to demonstrate an ability to maneuver the helicopter successfully at night in all phases of flight.

This requirement will not result in an undue economic burden. Contrary to the assumption made by the commenter that the majority of these operations would be airport-to-airport, a "takeoff and landing separated by en route phase of flight" could be comprised of a takeoff, a short flight in the vicinity of the takeoff point, and a landing at the same place as the takeoff. An example would be a flight around the landing pattern.

The "en route phase of flight" is intended to relate to the need for certain piloting skills. Demonstration of these skills may be accomplished without flying over long distances. There is nothing in the regulation that requires an applicant to fly from one airport to another. The flight hours and maneuvers required in paragraph (a)(1)(ii) are necessary for safety and do not pose an unnecessary economic burden. Consequently, the rule is adopted as proposed.

An objection was raised to the proposed requirement for 15 hours of flight instruction in a gyroplane. This requirement is necessary to ensure a level of proficiency needed for safe operation of the aircraft. Accordingly, the proposed rule is adopted.

Ref: Proposal 448, 449, and 450; Committee III.

Section 61.125 Aeronautical knowledge.

No public comments were received on § 61.125, and it is amended as proposed.

Section 61.127 Flight proficiency.

This section sets forth the operations that must be performed successfully to demonstrate the flight proficiency required to obtain a commercial pilot certificate. Among the maneuvers required for a helicopter commercial rating is rapid descent with power and recovery.

A number of objections were received regarding this rule. The commenters believe that a strong potential exists for an inexperienced student to be given a check ride by a check pilot not proficient in that particular helicopter. They express fear that this situation could lead to an accident in the event the maneuver is allowed to progress beyond reasonable limits. They question the benefit of requiring

Section 61.105 Aeronautical knowledge.**Section 61.107 Flight proficiency.**

No public comments were received on § 61.57, § 61.67, § 61.87, § 61.105, or § 61.107, and they are amended as proposed.

Section 61.113 Rotorcraft rating: Aeronautical experience.

Regarding the requirements for a helicopter class rating for a private pilot's license, one commenter suggests that the number of takeoffs and landings required in paragraph (a)(1)(ii) should be reduced to five, or alternatively, that the phrase "en route phase of flight" should be deleted. According to the commenter, if each landing/takeoff operation is separated by an en route phase of flight, an undue economic burden would be placed on the student since "the majority of these operations will be airport-to-airport." The commenter also points out that in some parts of the western United States, suitable night landing areas may be separated by distances in excess of 50 miles.

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This requirement will not result in an undue economic burden. Contrary to the assumption made by the commenter that the majority of these operations would be airport-to-airport, a "takeoff and landing separated by en route phase of flight" could be comprised of a takeoff, a short flight in the vicinity of the takeoff point, and a landing at the same place as the takeoff. An example would be a flight around the landing pattern.

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The question of weather minimums defined in paragraph (b)(2) has been analyzed in some detail. Subsequent to the recommendations developed at the Rotorcraft Regulatory Review Conference and Review Meeting, the FAA undertook an investigation to examine methods of providing a data base of weather information pertinent to the requirements and qualifications for alternate airports. The increased risk of ceilings and visibilities falling below landing minimums at several U.S. cities was quantified as a function of lowered visibility and ceiling requirements defined in paragraph (b)(2) (i) and (ii). The study utilized climatology data and weather deterioration models to calculate the probability that an airport would be below precision and nonprecision approach minimums. This investigation and study resulted in a report entitled "Weather Deterioration Models Applied to Alternate Airport Criteria," dated September 1981 (FAA-ED-81-92). The report reaches several preliminary but convincing conclusions. One of these directly related to the limitations defined in § 91.23(b)(2) is: "Any reduction in alternate airport requirements should be offset by limiting the duration of the flights for which the reduced requirements apply. It is recommended that reduced requirements only apply to flights whose flight time is two hours or less." The proposal in Notice No. 85-8 to reduce the ceiling and visibility requirement, however, has no such limitation of flight time as considered necessary by the report. In light of this evidence, the ceiling and visibility requirements for helicopters contained in paragraphs (b)(2) (i) and (ii) remain unchanged from the previous rule.

Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

No unfavorable comments were received on the proposal to amend § 91.116 to establish a separate takeoff minimum of one-half mile visibility for helicopters. One commenter writing on this section recommends that takeoff minimums be established for all Part 91 operations as are landing minimums under this section. Such a suggestion is not a part of the rotorcraft review and is outside the scope of this rulemaking.

Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

Section 133.1 (c)(5), as proposed, reiterated the exclusion of air carriers from rotorcraft external-load certification rules. The FAA has eliminated the exclusion from the final rule for the following reasons. The exclusion eliminates the applicability of all Subpart B. Contained within Subpart B is § 133.19(a)(2), which requires aircraft to meet certification requirements of Subpart D, including § 133.43, Structures and design. Similarly, neither § 133.21 nor § 133.23 would be applicable to air carrier operators conducting external-load operations. It could therefore be possible for a pilot who had met the proficiency

The question of weather minimums defined in paragraph (b)(2) has been analyzed in some detail. Subsequent to the recommendations developed at the Rotorcraft Regulatory Review Conference and Review Meeting, the FAA undertook an investigation to examine methods of providing a data base of weather information pertinent to the requirements and qualifications for alternate airports. The increased risk of ceilings and visibilities falling below landing minimums at several U.S. cities was quantified as a function of lowered visibility and ceiling requirements defined in paragraph (b)(2) (i) and (ii). The study utilized climatology data and weather deterioration models to calculate the probability that an airport would be below precision and nonprecision approach minimums. This investigation and study resulted in a report entitled "Weather Deterioration Models Applied to Alternate Airport Criteria," dated September 1981 (FAA-ED-81-92). The report reaches several preliminary but convincing conclusions. One of these directly related to the limitations defined in § 91.23(b)(2) is: "Any reduction in alternate airport requirements should be offset by limiting the duration of the flights for which the reduced requirements apply. It is recommended that reduced requirements only apply to flights whose flight time is two hours or less." The proposal in Notice No. 85-8 to reduce the ceiling and visibility requirement, however, has no such limitation of flight time as considered necessary by the report. In light of this evidence, the ceiling and visibility requirements for helicopters contained in paragraphs (b)(2) (i) and (ii) remain unchanged from the previous rule.

Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

No unfavorable comments were received on the proposal to amend § 91.116 to establish a separate takeoff minimum of one-half mile visibility for helicopters. One commenter writing on this section recommends that takeoff minimums be established for all Part 91 operations as are landing minimums under this section. Such a suggestion is not a part of the rotorcraft review and is outside the scope of this rulemaking.

Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

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Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

No unfavorable comments were received on the proposal to amend § 91.116 to establish a separate takeoff minimum of one-half mile visibility for helicopters. One commenter writing on this section recommends that takeoff minimums be established for all Part 91 operations as are landing minimums under this section. Such a suggestion is not a part of the rotorcraft review and is outside the scope of this rulemaking.

Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

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Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

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Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

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Section 91.116 Takeoff and landing under IFR: General.

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Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

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One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

Section 133.1 (c)(5), as proposed, reiterated the exclusion of air carriers from rotorcraft external-load certification rules. The FAA has eliminated the exclusion from the final rule for the following reasons. The exclusion eliminates the applicability of all Subpart B. Contained within Subpart B is § 133.19(a)(2), which requires aircraft to meet certification requirements of Subpart D, including § 133.43, Structures and design. Similarly, neither § 133.21 nor § 133.23 would be applicable to air carrier operators conducting external-load operations. It could therefore be possible for a pilot who had met the proficiency

The question of weather minimums defined in paragraph (b)(2) has been analyzed in some detail. Subsequent to the recommendations developed at the Rotorcraft Regulatory Review Conference and Review Meeting, the FAA undertook an investigation to examine methods of providing a data base of weather information pertinent to the requirements and qualifications for alternate airports. The increased risk of ceilings and visibilities falling below landing minimums at several U.S. cities was quantified as a function of lowered visibility and ceiling requirements defined in paragraph (b)(2) (i) and (ii). The study utilized climatology data and weather deterioration models to calculate the probability that an airport would be below precision and nonprecision approach minimums. This investigation and study resulted in a report entitled "Weather Deterioration Models Applied to Alternate Airport Criteria," dated September 1981 (FAA-ED-81-92). The report reaches several preliminary but convincing conclusions. One of these directly related to the limitations defined in § 91.23(b)(2) is: "Any reduction in alternate airport requirements should be offset by limiting the duration of the flights for which the reduced requirements apply. It is recommended that reduced requirements only apply to flights whose flight time is two hours or less." The proposal in Notice No. 85-8 to reduce the ceiling and visibility requirement, however, has no such limitation of flight time as considered necessary by the report. In light of this evidence, the ceiling and visibility requirements for helicopters contained in paragraphs (b)(2) (i) and (ii) remain unchanged from the previous rule.

Ref: Proposals 483 and 484; Committee III.

Section 91.116 Takeoff and landing under IFR: General.

No unfavorable comments were received on the proposal to amend § 91.116 to establish a separate takeoff minimum of one-half mile visibility for helicopters. One commenter writing on this section recommends that takeoff minimums be established for all Part 91 operations as are landing minimums under this section. Such a suggestion is not a part of the rotorcraft review and is outside the scope of this rulemaking.

Ref: Proposal 494; Committee III.

Section 91.171 Altimeter system and altitude reporting equipment tests and inspections.

No comments were received on the proposed changes to § 91.171, and the rule is amended as proposed.

Part 91, Appendix A-Category II Operations: Manual, Instruments, Equipment and Maintenance

One of the purposes of the Rotor 5 rulemaking was to enable rotorcraft to perform Category II operations. In the NPRM, changes that would have made this new authority possible were inadvertently omitted. These changes are now included in the final rule. In Part 91, Appendix A, this change has been accomplished by removing the word "airplane" and replacing it with the word "aircraft" wherever "airplane" appears.

Section 133.1 Applicability.

One comment was received regarding the rotorcraft external load operations requirements of paragraph (c)(4). The commenter suggests eliminating the requirement for a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The commenter argues that it is not logical for the FAA to eliminate the requirements for a Rotorcraft External-Load Operator Certificate during the development phase and demonstration of compliance with requirements of Parts 27, 29, and 133 and continue to require a Rotorcraft External-Load Operator Certificate for customer acceptance flights. The FAA disagrees with the reasoning. When a manufacturer offers such rides to the public, a higher degree of safety should be required. These customer passengers have a right to know that the safety of the flight on which they are about to embark has been reviewed by the FAA. The language proposed for paragraph (c)(4) is therefore adopted in the final rule.

Section 133.1 (c)(5), as proposed, reiterated the exclusion of air carriers from rotorcraft external-load certification rules. The FAA has eliminated the exclusion from the final rule for the following reasons. The exclusion eliminates the applicability of all Subpart B. Contained within Subpart B is § 133.19(a)(2), which requires aircraft to meet certification requirements of Subpart D, including § 133.43, Structures and design. Similarly, neither § 133.21 nor § 133.23 would be applicable to air carrier operators conducting external-load operations. It could therefore be possible for a pilot who had met the proficiency

Table 1
Cost and Savings of Notice No. 85-8 Rule Changes Having an Economic Impact

<i>FAR Section</i>	<i>Rule Changes</i>	<i>Industry Cost (Savings)</i>	<i>Principal Reason(s)</i>
Part 43	Appendix A: Major Alterations, Major Repairs and Preventive Maintenance	(\$461,000 recurring annual cost decrease) (\$25,000 annual profit increase)	Reduced expense to transport and use mechanics in remote areas; reduced rotorcraft downtime.
91.23	Fuel Requirements for IFR Flight	(\$542,000 recurring annual cost decrease)	Reduced operational costs from carrying less fuel.
133.21	Pilots	(\$537,000 recurring annual cost decrease)	Reduced cost from not having to transport chief pilot to field locations.
133.41	Flight Characteristics Requirements	(\$380,000 recurring annual cost decrease) (\$2,100 annual profit increase)	Reduced number of operational flight checks.
133.51	Airworthiness Certification	(\$116,000 annual cost decrease) (\$10,000 annual profit increase)	Reduced paperwork and administrative costs.
135.159	Equipment Requirements	\$681,000 one-time cost increase \$70,000 recurring annual cost \$3,400 one-time lost profit \$18,000 annual lost profit	Purchase and installation of Attitude and Heading indicators for rotorcraft now operated under Exemption 2695B. Maintenance cost for instruments; one-time loss for downtime associated with installation; annual loss for some operators stopping night flight instead of purchasing instruments.
135.173	Airborne Thunderstorm Detection Equipment Requirements	\$153,000 one-time cost increase \$16,000 recurring annual cost ¹	Purchase, installation and maintenance of minimum thunderstorm detection (TDX) equipment. It is equipment meeting intent and requirement of rule change for rotorcraft now operating under Exemption 2695B. ¹
135.429	Required Inspection Personnel	\$117,000 one-time cost ² (\$281,000 recurring annual cost decrease) or (\$262,000 net annualized cost decrease—10 years, 10% capital recovery)	Relieved work requirements for work done at remote areas or sites. One-time cost for some operators to install more extensive system of maintenance.*

¹ This estimate can vary from no cost to industry estimate shown. The decision in install TDX equipment or to cease flying depends on the prevailing thunderstorm weather occurrence in the area of normal operations and the flexibility an operator has to delay revenue flights until weather improves and to reschedule time into other time periods.

² The one-time cost accrues to a limited number of operators currently utilizing Exemption 2695B, which permits maintenance under § 135.411(a)(1) instead of § 135.411(a)(2). If only the exemption itself were removed, industry may have recurring cost increases. However, the change provides the primary benefit of the exemption to § 135.411(a)(2), and almost all of the expected recurring cost for them would not be incurred.

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Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§ 91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

- (1) Part 43, Appendix A—Part 135 operators serving remote areas.
- (2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.
- (3) Section 133.21—Part 133 operators in general.
- (4) Section 133.41—Part 133 operators in general.
- (5) Section 133.51—Part 133 operators in general.
- (6) Section 135.159—Part 135 operators flying to some extent VFR at night.
- (7) Section 135.173—Part 135 operators using rotorcraft with 10 seats or more.
- (8) Section 135.429—Part 135 operators using rotorcraft with 10 seats or more.

Although the first and second categories are, by definition, separate from each other, there exists no operator survey data that would allow the determination or reliable estimation of the actual extent to which each of the other categories overlaps. It is possible to estimate, however, whether or not it is likely that the number of operators experiencing a significant cumulative net economic impact (beneficial or detrimental) from all eight of these rules would constitute one-third or more of the total of individual potentially affected operators, given the (separate) distributions of fleet size for Part 135 and non-Part 135 operators. The determination can be made by assuming operator impact is proportional to operator fleet size.

The total of individual operators potentially affected by any of the rules may be estimated as follows:

Part 135 operators, including all in proposal categories (1), (6), (7), and (8), and 42 percent of those in categories (3), (4), and (5). Note: It is estimated that 42.4 percent of Part 133 operators also hold Part 135 certificates	358
Non-Part 135 certificate holders, including 57.6 percent of those in proposal categories (3), (4), and (5)	393
Total	751

This estimate maximizes the extent of “overlapping” among relevant categories and increases the change of one-third or more of the total individual operators’ experiencing a significant cumulative net impact. This is the case because some of the overlapping considered above is not necessarily the most likely representation of actual practice. For example, Part 91 operators that fly under IFR may well not also engage in Part 133 operations, which are generally carried out under VFR.

Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated “large” operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

The determination is sensitive to assumptions made concerning (1) the number of proposal category (2) operators eliminated as “large” entities, and (3) the fleet size of “small operators.”

Conclusion

A final regulatory flexibility analysis is not required for the revisions being made to §§ 135.159, 135.173, and 135.429. For each of the revisions, the annualized cost is not greater than \$3,300 for more than one-third of the operators who would be affected by the revised regulation. In view of the above, the regulatory changes herein will not have a significant economic impact on a substantial number of small entities.

Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§ 91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

- (1) Part 43, Appendix A—Part 135 operators serving remote areas.
- (2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.
- (3) Section 133.21—Part 133 operators in general.
- (4) Section 133.41—Part 133 operators in general.
- (5) Section 133.51—Part 133 operators in general.
- (6) Section 135.159—Part 135 operators flying to some extent VFR at night.
- (7) Section 135.173—Part 135 operators using rotorcraft with 10 seats or more.
- (8) Section 135.429—Part 135 operators using rotorcraft with 10 seats or more.

Although the first and second categories are, by definition, separate from each other, there exists no operator survey data that would allow the determination or reliable estimation of the actual extent to which each of the other categories overlaps. It is possible to estimate, however, whether or not it is likely that the number of operators experiencing a significant cumulative net economic impact (beneficial or detrimental) from all eight of these rules would constitute one-third or more of the total of individual potentially affected operators, given the (separate) distributions of fleet size for Part 135 and non-Part 135 operators. The determination can be made by assuming operator impact is proportional to operator fleet size.

The total of individual operators potentially affected by any of the rules may be estimated as follows:

Part 135 operators, including all in proposal categories (1), (6), (7), and (8), and 42 percent of those in categories (3), (4), and (5). Note: It is estimated that 42.4 percent of Part 133 operators also hold Part 135 certificates	358
Non-Part 135 certificate holders, including 57.6 percent of those in proposal categories (3), (4), and (5)	393
Total	751

This estimate maximizes the extent of “overlapping” among relevant categories and increases the change of one-third or more of the total individual operators’ experiencing a significant cumulative net impact. This is the case because some of the overlapping considered above is not necessarily the most likely representation of actual practice. For example, Part 91 operators that fly under IFR may well not also engage in Part 133 operations, which are generally carried out under VFR.

Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated “large” operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

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Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§ 91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

- (1) Part 43, Appendix A—Part 135 operators serving remote areas.
- (2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.
- (3) Section 133.21—Part 133 operators in general.
- (4) Section 133.41—Part 133 operators in general.
- (5) Section 133.51—Part 133 operators in general.
- (6) Section 135.159—Part 135 operators flying to some extent VFR at night.
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- (8) Section 135.429—Part 135 operators using rotorcraft with 10 seats or more.

Although the first and second categories are, by definition, separate from each other, there exists no operator survey data that would allow the determination or reliable estimation of the actual extent to which each of the other categories overlaps. It is possible to estimate, however, whether or not it is likely that the number of operators experiencing a significant cumulative net economic impact (beneficial or detrimental) from all eight of these rules would constitute one-third or more of the total of individual potentially affected operators, given the (separate) distributions of fleet size for Part 135 and non-Part 135 operators. The determination can be made by assuming operator impact is proportional to operator fleet size.

The total of individual operators potentially affected by any of the rules may be estimated as follows:

Part 135 operators, including all in proposal categories (1), (6), (7), and (8), and 42 percent of those in categories (3), (4), and (5). Note: It is estimated that 42.4 percent of Part 133 operators also hold Part 135 certificates	358
Non-Part 135 certificate holders, including 57.6 percent of those in proposal categories (3), (4), and (5)	393
Total	751

This estimate maximizes the extent of “overlapping” among relevant categories and increases the change of one-third or more of the total individual operators’ experiencing a significant cumulative net impact. This is the case because some of the overlapping considered above is not necessarily the most likely representation of actual practice. For example, Part 91 operators that fly under IFR may well not also engage in Part 133 operations, which are generally carried out under VFR.

Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated “large” operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

The determination is sensitive to assumptions made concerning (1) the number of proposal category (2) operators eliminated as “large” entities, and (3) the fleet size of “small operators.”

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A final regulatory flexibility analysis is not required for the revisions being made to §§ 135.159, 135.173, and 135.429. For each of the revisions, the annualized cost is not greater than \$3,300 for more than one-third of the operators who would be affected by the revised regulation. In view of the above, the regulatory changes herein will not have a significant economic impact on a substantial number of small entities.

Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§ 91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

- (1) Part 43, Appendix A—Part 135 operators serving remote areas.
- (2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.
- (3) Section 133.21—Part 133 operators in general.
- (4) Section 133.41—Part 133 operators in general.
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The total of individual operators potentially affected by any of the rules may be estimated as follows:

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Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated “large” operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

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Cumulative Economic Impact

The changes to Part 43, Appendix A, and §§ 91.23, 133.21, 133.41, 133.51, 135.169, 135.173 and 135.429 refer to different, but partially overlapping, categories of operators. The following eight changes are considered to have overlapping impacts:

- (1) Part 43, Appendix A—Part 135 operators serving remote areas.
- (2) Section 91.23—Part 91 operators (not holding Part 135 certificates) flying to some extent under IFR.
- (3) Section 133.21—Part 133 operators in general.
- (4) Section 133.41—Part 133 operators in general.
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The total of individual operators potentially affected by any of the rules may be estimated as follows:

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This estimate maximizes the extent of “overlapping” among relevant categories and increases the change of one-third or more of the total individual operators’ experiencing a significant cumulative net impact. This is the case because some of the overlapping considered above is not necessarily the most likely representation of actual practice. For example, Part 91 operators that fly under IFR may well not also engage in Part 133 operations, which are generally carried out under VFR.

Even with maximum overlapping of potentially affected small operator categories and given the relatively large number of non-Part 135, and even Part 135, operators that have single-craft or very small fleets, and estimated 217 out of 751 would be expected to bear a significant cumulative impact from the eight rules. The remaining 534 would not be significantly impacted. The number of small operators expected to be impacted would be less than one-third of the total of such operators unless at least 120 of those operators were eliminated by being designated “large” operators. Therefore, it is reasonable to expect that the cumulative net economic impact (beneficial or detrimental) of these rules would not reach significant levels for one-third or more potentially affected small operators.

The determination is sensitive to assumptions made concerning (1) the number of proposal category (2) operators eliminated as “large” entities, and (3) the fleet size of “small operators.”

Conclusion

A final regulatory flexibility analysis is not required for the revisions being made to §§ 135.159, 135.173, and 135.429. For each of the revisions, the annualized cost is not greater than \$3,300 for more than one-third of the operators who would be affected by the revised regulation. In view of the above, the regulatory changes herein will not have a significant economic impact on a substantial number of small entities.

The original intent of § 91.3 was to allow the pilot in command to deviate from certain regulations in the event of an in-flight emergency. Over time, regulations involving non-flight items were inserted into Subparts A and B, while flight-related regulations were inserted in other Subparts. Therefore, the word “in-flight” is being added to return the language to its original intent.

Other changes are nonsubstantive in nature. Except for such minor revisions, those parts of the proposal for which there were no comments are adopted as proposed. Finally, all other sections of Part 91 remain unchanged except for renumbering (see the cross-reference lists below).

Several amendments to Part 91 adopted since Notice No. 79-2C were published are reflected in the final rule. Where reference to other sections of this part were set forth in an amendment, the references have been changed to reflect the appropriate sections as used in the final rule. Those required changes published in the **FEDERAL REGISTER** prior to June 19, 1989, are discussed below.

Amendment No. 91-188, (50 FR 15380; April 17, 1985) amended current § 91.11, which governs the use of alcohol or drugs by any crewmember performing duty during the operation of an aircraft. This amendment took effect on June 17, 1985. Subsequently, Amendment No. 91-194 (51 FR 1229; January 9, 1986) amended § 91.11 (c) to impose a requirement for a crewmember to furnish the results of any test that indicates percentage by weight of alcohol in a crewmember's blood. This amendment took effect on April 9, 1986. Proposed § 91.17 has been revised accordingly.

Amendment No. 91-189 (50 FR 31588; August 5, 1985) removed references to “expect approach clearance time” in § 91.127. This amendment took effect on September 4, 1985. Section 91.185 reflects this amendment.

Amendment No. 91-190 (50 FR 45602; November 1, 1985) added a new paragraph (c) to current § 91.24. This amendment took effect on December 2, 1985. This new paragraph required all aircraft equipped with an operable radar beacon transponder be turned on while airborne in controlled airspace. Subsequently, § 91.24(c) was amended by Amendment No. 91-203 (53 FR 23374; June 21, 1988). Proposed § 91.215(c) has been redesignated as paragraph (d) and the changes brought about by Amendment Nos. 91-190 and 91-203 have been incorporated into revised § 91.215(c).

Amendment No. 91-191 (50 FR 46877; November 13, 1985) amended current § 91.14 (proposed § 91.107) by revising the title and the section to include reference to shoulder harnesses. This amendment took effect on December 12, 1985. Section 91.107 has been revised accordingly. Amendment No. 91-191 also added a new paragraph to current § 91.33 which requires a shoulder harness for specified seats in normal, utility, and acrobatic category airplanes with a seating configuration, excluding pilot seats, of nine or less, manufactured after December 12, 1986. This paragraph appears as § 91.205(b)(15).

Amendment No. 91-192 (50 FR 51189; December 13, 1985) terminated the suspension of Amendment No. 91-157 (44 FR 43714; July 26, 1979) staying the effective date of current § 91.30. This amendment took effect on March 31, 1986. Subsequently, Amendment No. 206 (53 FR 50195; December 13, 1988) amended § 91.30. Section 91.213 reflects these amendments.

Amendment No. 91-193 (50 FR 51193; December 13, 1985) changed the FAA's description of North Atlantic (NAT) Minimum Navigation Performance Specifications (MNPS) airspace to coincide with the International Civil Aviation Organization's (ICAO's) description of the NAT MNPS airspace. This has been reflected accordingly in Section 1 of Appendix C of this final rule.

Amendment No. 91-195 (51 FR 31098; September 2, 1986) corrects the reference to the Department of Defense office in current § 91.102 restricting the flight of aircraft near space flight operations. This amendment took effect on September 15, 1986. Section 91.143 reflects this amendment.

Amendment No. 91-196 (51 FR 40692; November 7, 1986) upgraded rotorcraft certification and operational requirements, thus effecting amendments to several FARs. This amendment took effect on January 6, 1987. Current § 91.2 was amended to afford small helicopter operators the opportunity to apply for Category II instrument approach authorization. Proposed § 91.193 has been revised accordingly. Current § 91.23 was amended to reduce the IFR reserve fuel requirement for helicopters from 45 to 30 minutes. Proposed § 91.167 has been amended to reflect this change. Current § 91.116 (proposed § 91.175) was amended to establish a separate takeoff minimum for helicopters under IFR, of one-half mile visibility. Current § 91.171 was amended to include helicopters in the altimeter system and altitude reporting equipment tests and inspection requirements. Proposed § 91.411 has been amended to reflect this change. In order to enable rotorcraft to perform Category II operations, Amendment No. 91-196 also amended Appendix A in Part 91 by removing the word “airplane” and replacing it with the word “aircraft” wherever it appears.

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Costs

Any cost associated with defining “shore” in § 91.205 as the high water line is expected to be negligible. The only parties potentially affected are small for-hire operators who do not comply with the obvious intention of the rule as presently worded. The FAA believes these operators are very few (probably less than 20 operators) in number. Such operators are likely to be traversing tidal flats in areas like Alaska. If such operators do not comply with the rule as written now, then the cost of compliance would be a maximum of about \$105 per year per aircraft. This assumes a \$50 cost for an approved flotation device per seat and a flotation device useful life of 5 years (\$10 per passenger seat per year), 10 seats per aircraft for these specific operators, plus \$5 per year per aircraft for a pyrotechnic signaling device.

Section 91.409 allows operators of turbine-powered rotorcraft to use alternate inspection programs such as inspections under an FAA-approved continuous airworthiness maintenance program. The operators may now schedule inspections in a manner that allows the highest level of utilization of their rotorcraft.

The FAA estimates that in 1984 there were approximately 3,000 active turbine-powered rotorcraft in non-air taxi use. The FAA assumes that about one-half of the operators of these aircraft would use the new inspection options.

The value of using these options is difficult to estimate. At a minimum, the major effect of this proposed rule would be one additional day per year of rotorcraft utility. The usefulness of this can be set at least at the cost of capital for 1 day. Using an average aircraft value of \$300,000 and a use of 250 days per year, the cost of capital can be estimated at \$180 per day (3,000,000 at 15 percent interest divided by 250 days). Thus, the minimum benefit is approximately \$0.27 million per year (half the fleet, 1500 turbine-powered rotorcraft times \$180). As the fleet grows, the value of this benefit also increases.

Because of the reorganization and resulting renumbering of provisions, persons who regularly refer to existing Part 91 must familiarize themselves with the new structure. It is also recognized that many non-regulatory materials containing references to present Part 91 sections may have to be modified. To assist in reference to the new provisions, a redesignation table, similar to the cross-reference table published herein, will be included in subsequent editions of the Code of Federal Regulations. The FAA believes that any short-term costs associated with transition to the reorganized Part 91 will be outweighed by the benefits inherent in a more logically organized set of regulations.

Trade Impact

The FAA has determined that this regulation will have no impact on international trade.

Regulatory Flexibility Determination

The Regulatory Flexibility Act (RFA) of 1980 was enacted by Congress in order to insure, among other things, that small entities are not disproportionately affected by Government regulations. The RFA requires agencies to review rules which may have a significant economic impact on a substantial number of small entities. As discussed above, the regulatory evaluation for Part 91 indicates that there are no negative or significant economic impacts associated with the proposed rule.

All but four of the changes to Part 91 are editorial or clarifying changes. Three of the four changes result only in minimal benefits being applied. The other is a change to § 91.205 which, while it is basically clarifying, may involve some minimal cost and benefit. Any economic impact would be minor—approximately \$100 per aircraft per year, and would affect only a few small for-hire operators in Alaska who do not comply with the intent of the rule as presently worded. Thus, the change could not be construed to cause “significant economic impact on a substantial number” of small entities within the

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The FAA estimates that in 1984 there were approximately 3,000 active turbine-powered rotorcraft in non-air taxi use. The FAA assumes that about one-half of the operators of these aircraft would use the new inspection options.

The value of using these options is difficult to estimate. At a minimum, the major effect of this proposed rule would be one additional day per year of rotorcraft utility. The usefulness of this can be set at least at the cost of capital for 1 day. Using an average aircraft value of \$300,000 and a use of 250 days per year, the cost of capital can be estimated at \$180 per day (3,000,000 at 15 percent interest divided by 250 days). Thus, the minimum benefit is approximately \$0.27 million per year (half the fleet, 1500 turbine-powered rotorcraft times \$180). As the fleet grows, the value of this benefit also increases.

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Section 91.409 allows operators of turbine-powered rotorcraft to use alternate inspection programs such as inspections under an FAA-approved continuous airworthiness maintenance program. The operators may now schedule inspections in a manner that allows the highest level of utilization of their rotorcraft.

The FAA estimates that in 1984 there were approximately 3,000 active turbine-powered rotorcraft in non-air taxi use. The FAA assumes that about one-half of the operators of these aircraft would use the new inspection options.

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Section 91.409 allows operators of turbine-powered rotorcraft to use alternate inspection programs such as inspections under an FAA-approved continuous airworthiness maintenance program. The operators may now schedule inspections in a manner that allows the highest level of utilization of their rotorcraft.

The FAA estimates that in 1984 there were approximately 3,000 active turbine-powered rotorcraft in non-air taxi use. The FAA assumes that about one-half of the operators of these aircraft would use the new inspection options.

The value of using these options is difficult to estimate. At a minimum, the major effect of this proposed rule would be one additional day per year of rotorcraft utility. The usefulness of this can be set at least at the cost of capital for 1 day. Using an average aircraft value of \$300,000 and a use of 250 days per year, the cost of capital can be estimated at \$180 per day (3,000,000 at 15 percent interest divided by 250 days). Thus, the minimum benefit is approximately \$0.27 million per year (half the fleet, 1500 turbine-powered rotorcraft times \$180). As the fleet grows, the value of this benefit also increases.

Because of the reorganization and resulting renumbering of provisions, persons who regularly refer to existing Part 91 must familiarize themselves with the new structure. It is also recognized that many non-regulatory materials containing references to present Part 91 sections may have to be modified. To assist in reference to the new provisions, a redesignation table, similar to the cross-reference table published herein, will be included in subsequent editions of the Code of Federal Regulations. The FAA believes that any short-term costs associated with transition to the reorganized Part 91 will be outweighed by the benefits inherent in a more logically organized set of regulations.

Trade Impact

The FAA has determined that this regulation will have no impact on international trade.

Regulatory Flexibility Determination

The Regulatory Flexibility Act (RFA) of 1980 was enacted by Congress in order to insure, among other things, that small entities are not disproportionately affected by Government regulations. The RFA requires agencies to review rules which may have a significant economic impact on a substantial number of small entities. As discussed above, the regulatory evaluation for Part 91 indicates that there are no negative or significant economic impacts associated with the proposed rule.

All but four of the changes to Part 91 are editorial or clarifying changes. Three of the four changes result only in minimal benefits being applied. The other is a change to § 91.205 which, while it is basically clarifying, may involve some minimal cost and benefit. Any economic impact would be minor—approximately \$100 per aircraft per year, and would affect only a few small for-hire operators in Alaska who do not comply with the intent of the rule as presently worded. Thus, the change could not be construed to cause “significant economic impact on a substantial number” of small entities within the

advance written notification of the proposed operation to ATC. A request for an authorization to deviate from these requirements is an infrequent occurrence. Consequently, the new rule will have minor benefits in terms of cost savings.

Sections 91.205, 91.509, and 91.511 clarify the definition of “shore” as that area of land adjacent to the water which is above the high water mark, thereby excluding tidal flats. From a safety standpoint, a tidal area covered with water is not a safe emergency landing place as a dry shoreline. The main benefit is improved survivability from accidents in areas where for-hire operators may not be in compliance with the intent of the present rule. There is insufficient information in accident records to be able to estimate how many deaths could have been avoided through the use of life jackets and pyrotechnic signaling devices in these instances.

Costs

Any cost associated with defining “shore” in § 91.205 as the high water line is expected to be negligible. The only parties potentially affected are small for-hire operators who do not comply with the obvious intention of the rule as presently worded. The FAA believes these operators are very few (probably less than 20 operators) in number. Such operators are likely to be traversing tidal flats in areas like Alaska. If such operators do not comply with the rule as written now, then the cost of compliance would be a maximum of about \$105 per year per aircraft. This assumes a \$50 cost for an approved flotation device per seat and a flotation device useful life of 5 years (\$10 per passenger seat per year), 10 seats per aircraft for these specific operators, plus \$5 per year per aircraft for a pyrotechnic signaling device.

Section 91.409 allows operators of turbine-powered rotorcraft to use alternate inspection programs such as inspections under an FAA-approved continuous airworthiness maintenance program. The operators may now schedule inspections in a manner that allows the highest level of utilization of their rotorcraft.

The FAA estimates that in 1984 there were approximately 3,000 active turbine-powered rotorcraft in non-air taxi use. The FAA assumes that about one-half of the operators of these aircraft would use the new inspection options.

The value of using these options is difficult to estimate. At a minimum, the major effect of this proposed rule would be one additional day per year of rotorcraft utility. The usefulness of this can be set at least at the cost of capital for 1 day. Using an average aircraft value of \$300,000 and a use of 250 days per year, the cost of capital can be estimated at \$180 per day (3,000,000 at 15 percent interest divided by 250 days). Thus, the minimum benefit is approximately \$0.27 million per year (half the fleet, 1500 turbine-powered rotorcraft times \$180). As the fleet grows, the value of this benefit also increases.

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Conclusion

The FAA has determined that this document involves an amendment that imposes no additional burden on any person. Accordingly, it has been determined that: The action does not involve a major rule under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and because it is of editorial nature, no impact is expected to result and a full regulatory evaluation is not required. In addition, the FAA certifies that this amendment will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

The Rule

In consideration of the foregoing, the Federal Aviation Administration amends the Federal Aviation Regulations (14 CFR Chapter I) effective October 25, 1989.

The authority citation for Part 133 continues to read as follows:

Authority: 49 U.S.C. 1348, 1354(a), 1421, and 1427; 49 U.S.C. 106(g) (Revised Pub. L. 97-449, January 12, 1983).

Amendment 133-12

Airworthiness Standards; Rotorcraft Regulatory Review Program Amendment No. 4

Adopted: February 12, 1990

Effective: April 5, 1990

(Published in 55 FR 7992, March 6, 1990)

SUMMARY: This rule adopts new and revised airworthiness standards for certification of airframe and related equipment on both normal and transport category rotorcraft. In addition, one amendment changes an operating rule affecting external load operators. These amendments grew out of a rotorcraft regulatory review program and the recognition by both government and industry that updated safety standards are needed. These amendments provide a high level of safety in design requirements, while removing certain unnecessary existing burdens and better utilizing the unique characteristics and capabilities of rotorcraft.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of April 5, 1990.

FOR FURTHER INFORMATION CONTACT: Mr. James H. Major, FAA, Rotorcraft Directorate, Aircraft Certification Service, Fort Worth, Texas 76193-0111, telephone (817) 624-5117.

SUPPLEMENTARY INFORMATION:

Background

These amendments are the last in a series of amendments issued as a part of the Rotorcraft Regulatory Review Program. The first of the series of amendments in this program addressed applicability and icing certification standards and was published in the **FEDERAL REGISTER** on January 31, 1983 (48 FR 4374). The second of the series of amendments dealt with rotorcraft flight characteristics and systems and equipment and was published in the **FEDERAL REGISTER** on November 6, 1984 (49 FR 44422). The third in the series upgraded operation and maintenance rules and was published in the **FEDERAL REGISTER** on November 7, 1986 (51 FR 40692). The fourth in the series involved the powerplant, rotor drive mechanism, and their associated support systems, and was published in the **FEDERAL REGISTER** on September 2, 1988 (53 FR 34198).

These amendments are based on Notice of Proposed Rulemaking (NPRM) No. 88-7 published in the **FEDERAL REGISTER** on March 21, 1988 (53 FR 9190). In addition, a correction notice, containing minor editorial changes, was published in the **FEDERAL REGISTER** on April 5, 1988 (53 FR 11162).

All interested persons have been given an opportunity to participate in the making of these amendments and due consideration has been given to all matters presented. A number of nonsubstantive changes and minor changes of an editorial and clarifying nature have been made to the proposals based upon relevant comments received and upon further review by the FAA. Except as indicated herein, the proposals contained in the notice have been adopted without change.

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§ 27.629/§ 29.629 *Flutter.*

The notice proposed to remove the word “part” and insert the words “aerodynamic surface” in these sections. These revisions prevent any misunderstanding since flutter is an aeroelastic phenomenon associated with aerodynamic surfaces, such as stabilizers, fins, control surfaces, wings, and rotor blades.

One comment was received on the proposal for § 29.629. The commenter contends that the proposed requirement is inadequate but did not submit a counterproposal. The commenter provides arguments and procedures for an analysis but concludes by recommending advisory material to encompass procedures, criteria, and concerns. The commenter’s recommendation will be considered and may be included in future advisory material, but it is not appropriate for an objective design standard such as § 29.629. These proposals are, therefore, adopted without change.

§ 29.663/§ 29.663 *Ground resonance prevention means.*

The notice proposed to amend paragraph (a) of § 27.663 to include failure assessment and to allow the use of analysis or tests to prove that a malfunction or failure of a single means will not result in ground resonance of the rotorcraft (dynamic instability of the rotorcraft while in contact with the ground). No comments were received on § 27.663, and this section is adopted as proposed.

In addition, the notice proposed to revise paragraph (a) of § 29.663 to include failure assessment and to allow the use of analysis or tests to prove that a malfunction or failure of a single means will not cause ground resonance of the rotorcraft. The notice also proposed to revise paragraph (b) to result in a standard parallel to present § 27.663(b).

One comment was received on § 29.663. The commenter recommends adding a specific level of reliability in paragraph (a) or initiating guidance material. The FAA will consider adding a reliability value to advisory material as the commenter recommends, but amending the standard is beyond the scope of the notice. It is noted that compliance with the standard may be achieved by means other than reliability methods; e.g., by showing that malfunction or failure of a single means will not cause ground resonance. In this way, a deterministic method rather than a probability assessment method may be employed. This section is adopted as proposed.

§ 27.674/§ 29.674 *Interconnected controls.*

The notice proposed to add new §§ 27.674 and 29.674 for interconnected controls. These proposed standards would require continued operation of the flight control systems after malfunction, failure, or jamming of an interconnected flight control or engine control for normal and transport category rotorcraft. These standards specifically include primary flight controls such as the cyclic and collective controls, if interconnected.

One commenter contends that these proposals are unrealistic and unnecessary in light of the present flight control design standards and the excellent service experience of primary flight controls, even for those that are interconnected. The commenter also states that safe flight is generally impossible after a malfunction, failure, or jam of a primary control. The commenter proposes to limit the standard to consideration of malfunctions of auxiliary controls when connected to primary flight controls since current state-of-the-art flight control system designs can address malfunctions of an auxiliary control when connected to a primary control. These systems allow continued safe flight and landing after such malfunctions. The FAA agrees, and the comment is incorporated.

Another comment was received on § 29.674 that applies equally to § 27.674. The commenter suggests inserting the word “primary” between “each” and “flight” for clarity and further suggests that the examples given in the last clause of the proposal are confusing and should be deleted.

The FAA agrees with the commenter’s recommendations and further agrees that the present standards provide for reliable primary control systems. Therefore, proposed §§ 27.674 and 29.674 are revised to apply to each primary flight control when connected to an auxiliary control, and the last clause, which contains examples, is removed. Advisory material will be used to provide examples. The amendments are also clarified by adding the words “and landing” after “safe flight.” This completes the last and final phase of a safe flight. In addition, an editorial change to § 29.674 reverses the words “independently operate” to “operate independently” to agree with § 27.674. The amendments to §§ 27.674 and 29.674 are adopted with the changes discussed.

§ 27.685 *Control system details.*

The notice proposed to amend the standard for control system details by adding a new paragraph (d) for cable control system standards and new paragraphs (e) and (f), identical to § 29.685 (e) and (f) for control system bearing standards. This amendment adds design standards for a cable control system

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§ 27.629/§ 29.629 *Flutter.*

The notice proposed to remove the word “part” and insert the words “aerodynamic surface” in these sections. These revisions prevent any misunderstanding since flutter is an aeroelastic phenomenon associated with aerodynamic surfaces, such as stabilizers, fins, control surfaces, wings, and rotor blades.

One comment was received on the proposal for § 29.629. The commenter contends that the proposed requirement is inadequate but did not submit a counterproposal. The commenter provides arguments and procedures for an analysis but concludes by recommending advisory material to encompass procedures, criteria, and concerns. The commenter’s recommendation will be considered and may be included in future advisory material, but it is not appropriate for an objective design standard such as § 29.629. These proposals are, therefore, adopted without change.

§ 29.663/§ 29.663 *Ground resonance prevention means.*

The notice proposed to amend paragraph (a) of § 27.663 to include failure assessment and to allow the use of analysis or tests to prove that a malfunction or failure of a single means will not result in ground resonance of the rotorcraft (dynamic instability of the rotorcraft while in contact with the ground). No comments were received on § 27.663, and this section is adopted as proposed.

In addition, the notice proposed to revise paragraph (a) of § 29.663 to include failure assessment and to allow the use of analysis or tests to prove that a malfunction or failure of a single means will not cause ground resonance of the rotorcraft. The notice also proposed to revise paragraph (b) to result in a standard parallel to present § 27.663(b).

One comment was received on § 29.663. The commenter recommends adding a specific level of reliability in paragraph (a) or initiating guidance material. The FAA will consider adding a reliability value to advisory material as the commenter recommends, but amending the standard is beyond the scope of the notice. It is noted that compliance with the standard may be achieved by means other than reliability methods; e.g., by showing that malfunction or failure of a single means will not cause ground resonance. In this way, a deterministic method rather than a probability assessment method may be employed. This section is adopted as proposed.

§ 27.674/§ 29.674 *Interconnected controls.*

The notice proposed to add new §§ 27.674 and 29.674 for interconnected controls. These proposed standards would require continued operation of the flight control systems after malfunction, failure, or jamming of an interconnected flight control or engine control for normal and transport category rotorcraft. These standards specifically include primary flight controls such as the cyclic and collective controls, if interconnected.

One commenter contends that these proposals are unrealistic and unnecessary in light of the present flight control design standards and the excellent service experience of primary flight controls, even for those that are interconnected. The commenter also states that safe flight is generally impossible after a malfunction, failure, or jam of a primary control. The commenter proposes to limit the standard to consideration of malfunctions of auxiliary controls when connected to primary flight controls since current state-of-the-art flight control system designs can address malfunctions of an auxiliary control when connected to a primary control. These systems allow continued safe flight and landing after such malfunctions. The FAA agrees, and the comment is incorporated.

Another comment was received on § 29.674 that applies equally to § 27.674. The commenter suggests inserting the word “primary” between “each” and “flight” for clarity and further suggests that the examples given in the last clause of the proposal are confusing and should be deleted.

The FAA agrees with the commenter’s recommendations and further agrees that the present standards provide for reliable primary control systems. Therefore, proposed §§ 27.674 and 29.674 are revised to apply to each primary flight control when connected to an auxiliary control, and the last clause, which contains examples, is removed. Advisory material will be used to provide examples. The amendments are also clarified by adding the words “and landing” after “safe flight.” This completes the last and final phase of a safe flight. In addition, an editorial change to § 29.674 reverses the words “independently operate” to “operate independently” to agree with § 27.674. The amendments to §§ 27.674 and 29.674 are adopted with the changes discussed.

§ 27.685 *Control system details.*

The notice proposed to amend the standard for control system details by adding a new paragraph (d) for cable control system standards and new paragraphs (e) and (f), identical to § 29.685 (e) and (f) for control system bearing standards. This amendment adds design standards for a cable control system

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§ 29.663/§ 29.663 *Ground resonance prevention means.*

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One comment was received on § 29.663. The commenter recommends adding a specific level of reliability in paragraph (a) or initiating guidance material. The FAA will consider adding a reliability value to advisory material as the commenter recommends, but amending the standard is beyond the scope of the notice. It is noted that compliance with the standard may be achieved by means other than reliability methods; e.g., by showing that malfunction or failure of a single means will not cause ground resonance. In this way, a deterministic method rather than a probability assessment method may be employed. This section is adopted as proposed.

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and transport category B rotorcraft as an option within the standards proposed in the notice. The proposals are, therefore, adopted without change.

§ 27.865/§ 29.865 *External load attaching means.*

The notice proposed to amend § 27.865 and 29.865 to allow use of a -design factor less than 2.5 g's, provided the lower load factor is not likely to be exceeded by virtue of the rotorcraft characteristics and capability. It also proposed to exclude fatigue evaluation of the cargo attaching means except as stated in the requirements.

Two comments were received that apply to both sections. One **commenter** recommends significant changes to the proposal to address both a "vertical" type of Class B rotorcraft-load combination and a "nonvertical" type of Class C rotorcraft-load combination such as wire pulling or stringing. The **commenter** recommends removing the sections referenced in the proposal and adding phrases to allow use of a reduced design load factor, since the application of the specific sections does not implement the objective of the proposal. In addition, for the nonvertical type load (Class C or **noncargo** hook), the external load is primarily horizontal and the maximum maneuver load factor is well below 2.5 g's.

The **commenter** recommends a standard allowing use of a design "load factor due to flight and design characteristics for which authorization is requested * * * " In conjunction with the reduced load factor, the load direction would be "in any direction for which there is a possibility of loading."

The citation of the standards is essential to establish the rational design load factor, which is less than 2.5 g's. The **commenter's** recommendation may have merit, but the present standard and its predecessor have been used successfully for both vertical and nonvertical types of loads. Further, to reduce the design load factor below 2.5 g's, other than as proposed, is beyond the scope of the notice.

Another **commenter** agrees with the proposal but further recommends amending the driveshaft standard of § 27.935, Shafting joints, to require the applicant to list the maximum driveshaft misalignment angle and further prove that this angle will not be exceeded for all types of operation for which certification is requested. This recommendation is beyond the scope of the notice and is, therefore, not adopted. Additional advisory material may address the driveshaft misalignment problem encountered in certain external cargo operations.

One **commenter** recommends an editorial change to remove the word "of" and insert "times" in place thereof to clarify that the maximum external load is multiplied by the factor in the standard. The FAA agrees; however, instead of the word "times," the words "multiplied by" are being inserted to clarify the standard even further.

One additional comment was submitted specifically for proposed § 29.865. The **commenter** expresses dissatisfaction with the proposed reduction in the design limit load factor below 2.5 g's. The FAA notes that the reduction in load factor is related to the characteristics and capability of the **rotocraft** design approved under the standards referenced. (For example, reduced load factors below 2.5 g's are already provided for in current § 29.337.) The **commenter** further notes fatigue substantiation is not required for the attaching means, and rotorcraft use in "external cargo" service results in temporary, high loads for the reasons cited by the **commenter**. Fatigue evaluation of external cargo attaching means was not proposed in the notice; failure of the attaching means is not considered a hazard to the rotorcraft because "emergency" release of the cargo is a typical feature and requirement.

The **commenter** also states that the effect of the external load and operations on the whole rotorcraft must be determined. The **commenter** offered examples such as swinging loads. However, the **commenter** would consider the proposal to amend § 29.865 acceptable if the fatigue substantiation proposal to amend § 29.571 were adopted. As noted above, the FAA has not adopted proposed § 29.571. The fatigue substantiation of the whole rotorcraft for certain heavy-lift operations has been proposed in Notice 86-13, and the issue raised by the **commenter** will be addressed in that proceeding, if adopted.

Therefore, the proposals to amend § 27.865 and 29.865 are adopted without change.

§ 29.1415 *Ditching equipment.*

The notice proposed to revise the equipment standard of § 29.1415 for ditching equipment to agree with the operating rules. The operating rules require enough liferafts to accommodate the occupants of the aircraft. The amendment to paragraph (b)(1) requires at least two liferafts to accommodate all occupants.

Two **commenters** responded, and both disagree with the proposal. One recommends changing the operating rules instead of the airworthiness standards, and the other suggests that the airworthiness standards supplement the operating rules cited.

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One **commenter** recommends an editorial change to remove the word "of" and insert "times" in place thereof to clarify that the maximum external load is multiplied by the factor in the standard. The FAA agrees; however, instead of the word "times," the words "multiplied by" are being inserted to clarify the standard even further.

One additional comment was submitted specifically for proposed § 29.865. The **commenter** expresses dissatisfaction with the proposed reduction in the design limit load factor below 2.5 g's. The FAA notes that the reduction in load factor is related to the characteristics and capability of the **rotocraft** design approved under the standards referenced. (For example, reduced load factors below 2.5 g's are already provided for in current § 29.337.) The **commenter** further notes fatigue substantiation is not required for the attaching means, and rotorcraft use in "external cargo" service results in temporary, high loads for the reasons cited by the **commenter**. Fatigue evaluation of external cargo attaching means was not proposed in the notice; failure of the attaching means is not considered a hazard to the rotorcraft because "emergency" release of the cargo is a typical feature and requirement.

The **commenter** also states that the effect of the external load and operations on the whole rotorcraft must be determined. The **commenter** offered examples such as swinging loads. However, the **commenter** would consider the proposal to amend § 29.865 acceptable if the fatigue substantiation proposal to amend § 29.571 were adopted. As noted above, the FAA has not adopted proposed § 29.571. The fatigue substantiation of the whole rotorcraft for certain heavy-lift operations has been proposed in Notice 86-13, and the issue raised by the **commenter** will be addressed in that proceeding, if adopted.

Therefore, the proposals to amend § 27.865 and 29.865 are adopted without change.

§ 29.1415 *Ditching equipment.*

The notice proposed to revise the equipment standard of § 29.1415 for ditching equipment to agree with the operating rules. The operating rules require enough liferafts to accommodate the occupants of the aircraft. The amendment to paragraph (b)(1) requires at least two liferafts to accommodate all occupants.

Two **commenters** responded, and both disagree with the proposal. One recommends changing the operating rules instead of the airworthiness standards, and the other suggests that the airworthiness standards supplement the operating rules cited.

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart B-Certification Rules

§ 133.11 Certificate required.

(a) No person subject to this part may conduct rotorcraft external-load operations within the United States without, or in violation of the terms of, a Rotorcraft External-Load Operator Certificate issued by the Administrator under § 133.17.

(b) No person holding a Rotorcraft External-Load Operator Certificate may conduct rotorcraft external-load operations subject to this part under a business name that is not on that certificate.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.13 Duration of certificate.

Unless sooner surrendered, suspended, or revoked, a Rotorcraft External-Load Operator Certificate expires at the end of the twenty-fourth month after the month in which it is issued or renewed.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.14 Carriage of narcotic drugs, marijuana, and depressant or stimulant drugs or substances.

If the holder of a certificate issued under this part permits any aircraft owned or leased by that holder to be engaged in any operation that the certificate holder knows to be in violation of § 91.19(a) of this chapter, that operation is a basis for suspending or revoking the certificate.

(Docket No. 12035, (38 FR 17493) 7/2/73); (Amdt. 133-4, Eff. 8/1/73); (Amdt. 133-10, Eff. 8/18/90)

§ 133.15 Application for certificate issuance or renewal.

Application for an original certificate or renewal of a certificate issued under this part is made on a form, and in a manner, prescribed by the Administrator. The form may be obtained from an FAA Flight Standards District Office. The com-

pleted application is sent to the district office that has jurisdiction over the area in which the applicant's home base of operation is located.

(Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77); (Amdt. 133-11, Eff. 10/25/89)

§ 133.17 Requirements for issuance of a rotorcraft external-load operator certificate.

If an applicant shows that he complies with §§ 133.19, 133.21, and 133.23, the Administrator issues a Rotorcraft External-Load Operator Certificate to him with an authorization to operate specified rotorcraft with those classes of rotorcraft-load combinations for which he complies with the applicable provisions of subpart D of this part.

§ 133.19 Rotorcraft.

(a) The applicant must have the exclusive use of at least one rotorcraft that-

(1) Was type certificated under, and meets the requirements of, part 27 or 29 of this chapter (but not necessarily with external-load-carrying attaching means installed) or of § 21.25 of this chapter for the special purpose of rotorcraft external-load operations;

(2) Complies with the certification provisions in subpart D of this part that apply to the rotorcraft-load combinations for which authorization is requested; and

(3) Has a valid standard or restricted category airworthiness certificate.

(b) For the purposes of paragraph (a) of this section, a person has exclusive use of a rotorcraft if he has the sole possession, control, and use of it for flight, as owner, or has a written agreement (including arrangements for the performance of required maintenance) giving him that possession, control, and use for at least six consecutive months.

Docket No. 15176, (42 FR 24198) 5/12/77); (Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-6, Eff. 8/10/77); (Amdt. 133-7, Eff. 6/25/77)

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-

Subpart D-Airworthiness Requirements

§ 133.41 Flight characteristics requirements.

(a) The applicant must demonstrate to the Administrator, by performing the operational flight checks prescribed in paragraphs (b), (c), and (d) of this section, as applicable, that the rotorcraft-load combination has satisfactory flight characteristics, unless these operational flight checks have been demonstrated previously and the rotorcraft-load combination flight characteristics were satisfactory. For the purposes of this demonstration, the external-load weight (including the external-load attaching means) is the maximum weight for which authorization is requested.

(b) Class A rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Take off and landing.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

(c) Class B and D rotorcraft-load combinations: The operational flight check must consist of at least the following maneuvers:

- (1) Pickup of the external load.
- (2) Demonstration of adequate directional control while hovering.
- (3) Acceleration from a hover.
- (4) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.
- (5) Demonstrating appropriate lifting device operation.
- (6) Maneuvering of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

(d) Class C rotorcraft-load combinations: For Class C rotorcraft-load combinations used in wire-stringing, cable-laying, or similar operations, the operational flight check must consist of the maneu-

vers, as applicable, prescribed in paragraph (c) of this section.

(Amdt. 133-5, Eff. 2/1/77); (Amdt. 133-9, Eff. 1/6/87)

§ 133.43 Structures and design.

(a) *External-load attaching means.* Each external-load attaching means must have been approved under-

- (1) Part 8 of the Civil Air Regulations on or before January 17, 1964;
- (2) Part 133, before February 1, 1977;
- (3) Part 27 or 29 of this chapter, as applicable, irrespective of the date of approval; or
- [(4) Section 21.25 of this chapter.]

(b) *Quick release devices.* Each quick release device must have been approved under-

- (1) Part 27 or 29 of this chapter, as applicable;
- (2) Part 133, before February 1, 1977; [or]
- [(3) Section 21.25 of this chapter, except the device must comply with §§ 27.865(b) and 29.865(b), as applicable, of this chapter.]

(c) *Weight and center of gravity—*

(1) *Weight.* The total weight of the rotorcraft-load combination must not exceed the total weight approved for the rotorcraft during its type certification.

(2) *Center of gravity.* The location of the center of gravity must, for all loading conditions, be within the range established for the rotorcraft during its type certification. For Class C rotorcraft-load combinations, the magnitude and direction of the loading force must be established at those values for which the effective location of the center of gravity remains within its established range.

(Amdt. 133-2, Eff. 7/6/66); (Amdt. 133-5, Eff. 2/1/77); [(Amdt. 133-12, Eff. 4/5/90)]

§ 133.45 Operating limitations.

In addition to the operating limitations set forth in the approved Rotorcraft Flight Manual, and to any other limitations the Administrator may pre-